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SEPTEMBER, 1905.

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TEXTILE WORLD RECORD

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Callenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

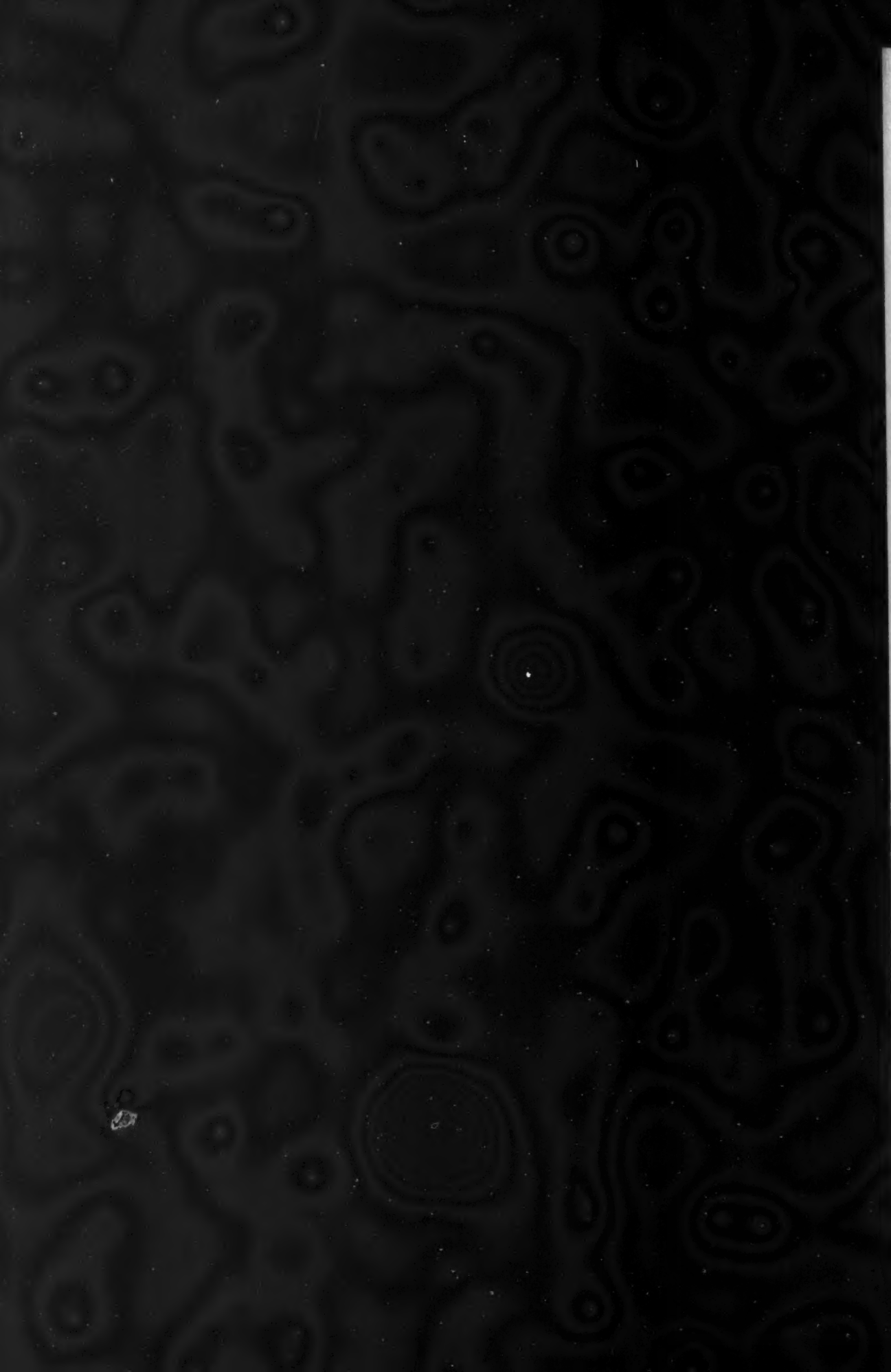
Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application

Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg., Atlanta, Ga.

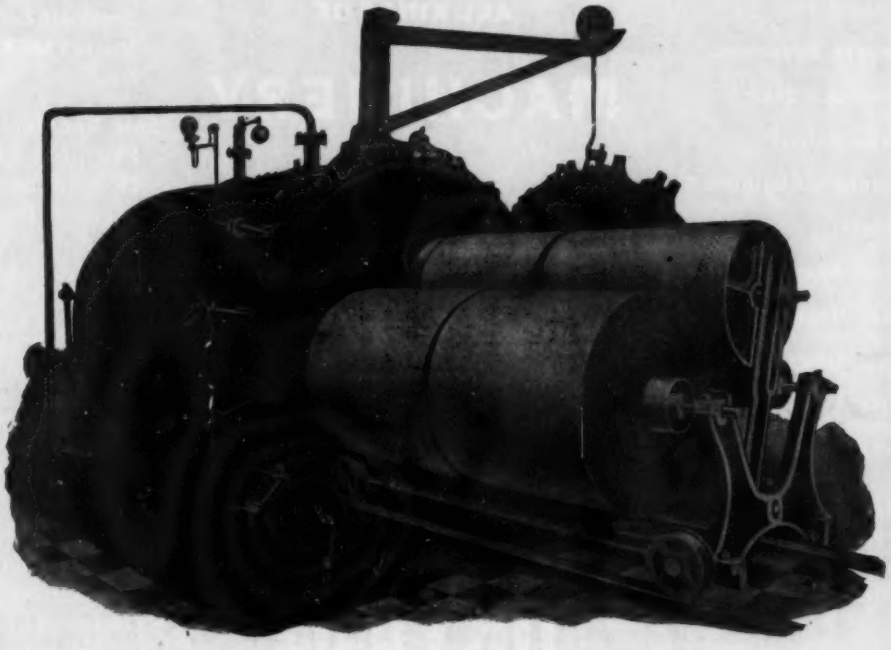


Open Bleaching System

OF

JACKSON & HUNT

Patented in the United States, Great Britain and the Continent
U. S. Patent, January 15th, 1901. No. 666,056



H. W. Butterworth & Sons Co.

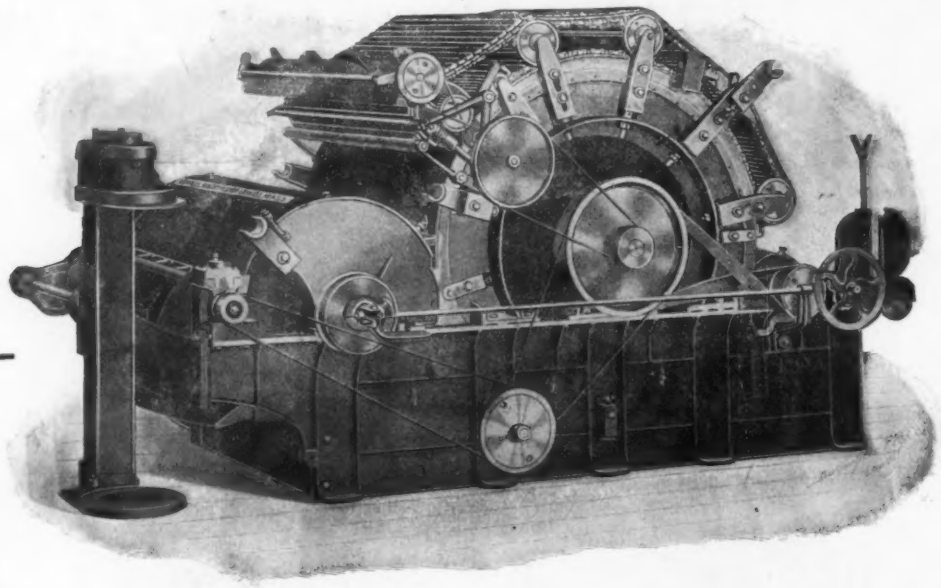
Manufacturers of

Bleaching, Dyeing, Drying and Finishing Machinery

YORK AND CEDAR STREETS

PHILADELPHIA

Sole Makers for the United States



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

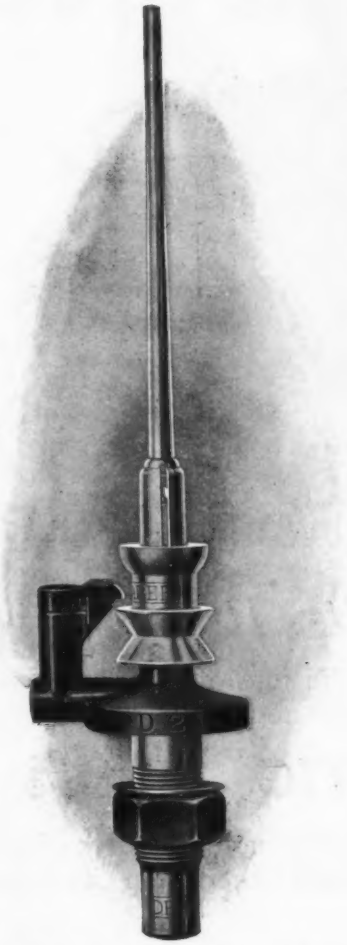
Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.

A New Spindle Improvement



The Rabbeth Centrifugal Bobbin Clutch.

Fits the Bobbin loosely when at rest—allows considerable variation in fit.

Bobbins will all go down into place and Traverse can be lengthened.

Allows easier and quicker doffing — stronger bobbins — less reaming.

Draper Company, Hopedale, Mass.

We Also Build Looms.

THE GEO. W. STAFFORD COMPANY

WEAVING MACHINERY

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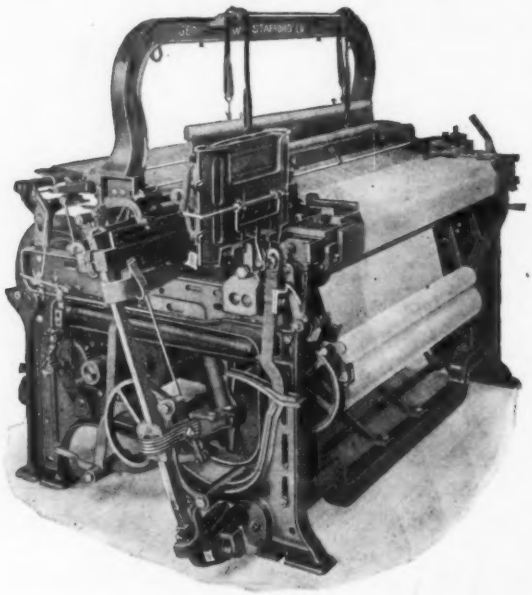


Ideal Automatic Loom

History Repeats Itself

Our previous successful efforts in the line of improvements in weaving machinery have culminated in our new

IDEAL AUTOMATIC LOOM

Considering quantity of goods produced per weaver, quality of goods, cost of supplies, repair bills, etc., there is no other loom can compare with it for economy of operation.

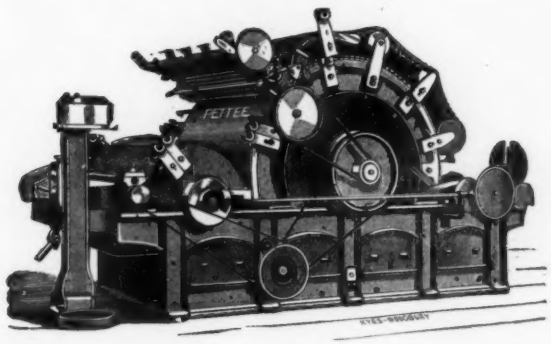
Cop or bobbin filling may be used equally well. One weaver can operate successfully from twelve to thirty looms, and under favorable conditions even more. No reduction in speed. A high grade plain loom as a basis.

Write for further particulars

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



PICKERS,
REVOLVING FLAT CARDS,
DRAWING FRAMES,
RAILWAY HEADS,

SLUBBING,
INTERMEDIATE AND ROVING FRAMES,
SPINNING FRAMES,

SPOOLERS AND REELS.

Shops: { **Biddeford, Me.**
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Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

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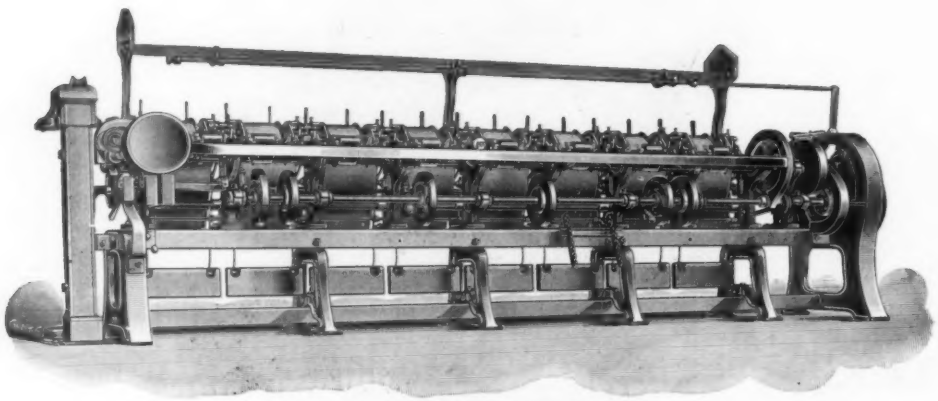


The Whitin 8 Head Comber.

Southern Agent, . . . S. W. CRAMER

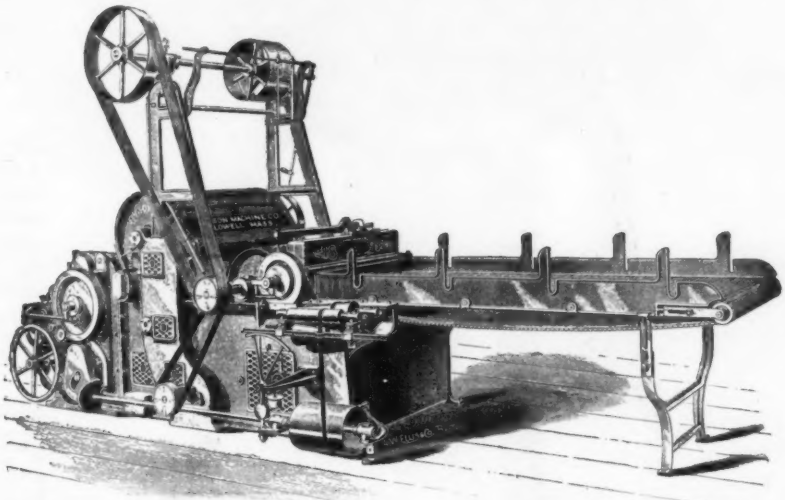
Trust Building, CHARLOTTE, N. C.
and Equitable Bldg, ATLANTA, GA.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines,
Combers,
Railway Heads,
Drawing Frames,

Spinning Frames,
Spoolers,
Twisters,
Reels,
Looms,
Long Chain Quilling Machines.

The Best Pickers

In the Cotton Field nothing equals the DARKY COTTON PICKERS.



In the Cotton Mill nothing equals the KITSON COTTON PICKERS.

KITSON MACHINE CO., LOWELL, MASS.

LARGEST BUILDERS OF COTTON OPENERS AND LAPPERS IN THE WORLD.

STUART W. CRAMER, Southern Agt., Charlotte, N. C. and Equitable Bldg., Atlanta, Ga.

SCOTT & WILLIAMS

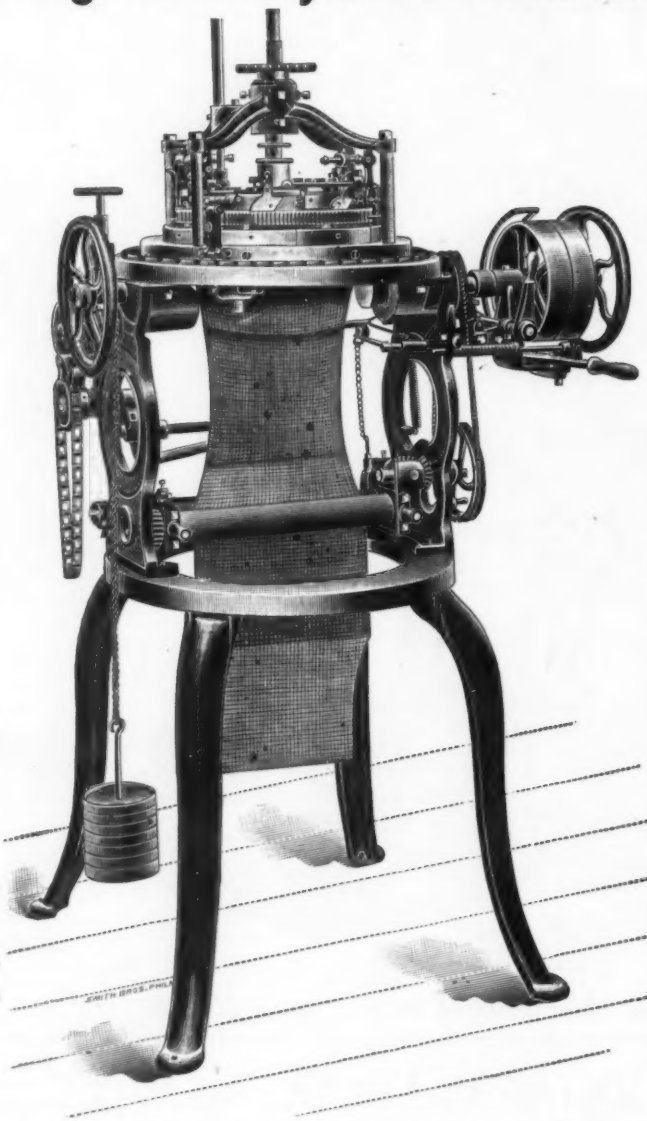
BUILDERS OF

Rib Knitting Machinery for Underwear and Hosiery

The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes, 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, four to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters etc.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Antomatic and 7-8 Automatic Seamless Hosiery Machinery.

Full Particulars, Samples and Special Catalogues on Application.

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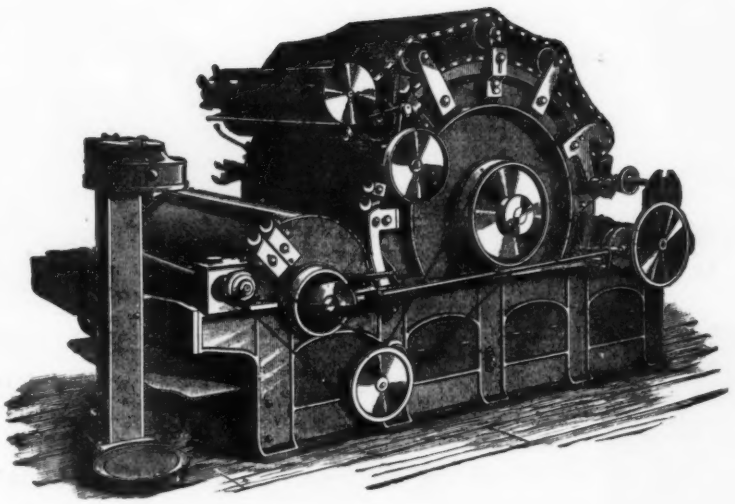
MASON MACHINE WORKS,

TAUNTON, MASS.

Cotton Machinery



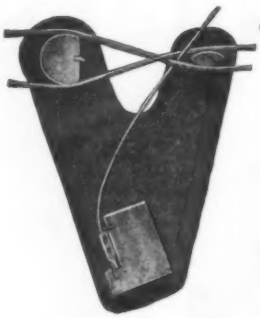
Cards, Combers, Railway Heads, Drawing Frames, Spinning Frames, Mules and Looms,

INCLUDING

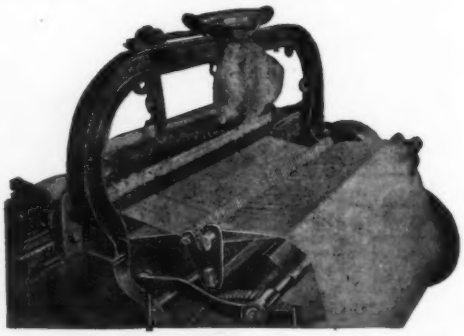
Plain and Fancy Silk Looms

Southern Office, Charlotte, S. C.

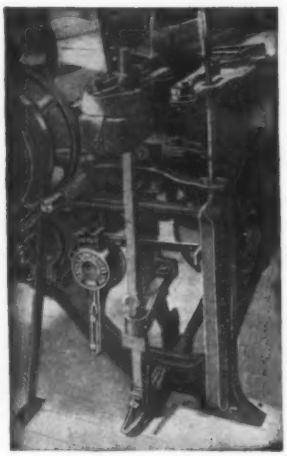
Absolute Efficiency from Bed-Rock Simplicity



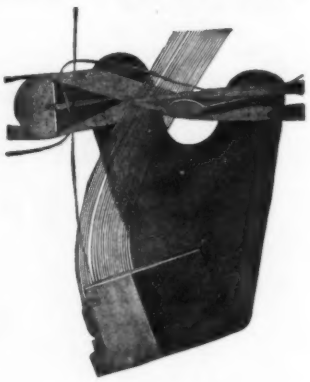
Our **WARP-STOP** controls
TWO threads by ONE spring WIRE, held in a COMB,
engaging the warp
in such a way that
the TENSION is
UNDER CONTROL,
and
ABRASION of the
yarn is AVOIDED.



The COMBS are RAPIDLY INSERTED, BEFORE or AFTER the warp is in the loom,
and are carried in a
bar suspended from **the LEASE-RODS** which **ARE NOT FIXED** to the loom side, but **FREE to take their proper positions, and ALLOW the NATURAL MOVEMENT of the WARP,** so that **the COVER of the cloth is UNAFFECTED.**



When a thread breaks the WIRE SPRINGS OUT from the comb, thus giving
a CLEAR SIGNAL of the place
of the BROKEN END,
and, by striking
a CONTACT SLIP upon which
LINT CANNOT COLLECT,
closes the circuit through



a PERFECT KNOCK-OFF, EASILY and RAPIDLY FIXED,
and **actuated by a SPARKLESS current.**

American Textile Appliances Co.

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EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8″ stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery. Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

JOSEPH SYKES BROS., Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S, Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'. Grinding Machinery and Emery Filleting.
The Best French and English Combing and Rubbing Aprons.
Harding's Pins and Circles, Varey's Fallers, etc.

HARWOOD'S MACHINERY

Increases Production, Improves Quality, Decreases Labor Cost.

THE BRAMWELL SELF-WEIGHING FEEDER,

For Woolen, Worsted, Hosiery and Shoddy Cards and Garnett Machines.

We began introducing this feeder more than twenty years ago and its use is now practically universal. Many other types and makes have been tried and discarded, but the Bramwell, in its improved and up to date form, is now recognized everywhere as the most perfect feeder and only complete feeding machine in the world.

Our long experience has proved conclusively that where evenness is required—determined by weighing—our weighing feature is absolutely indispensable. Several attempts have been made to introduce feeding machines ignoring this principle, but none have succeeded.

We have made a careful study of all phases of the feeding problem and by adaptations and modifications of the Bramwell Feeder to meet the particular conditions, are prepared to feed evenly all kinds of stock from rabbit's fur to jute tow, including shoddy, cotton, fine wool, mixtures, fine and coarse worsted, flax tow, long worsted and all other kinds of stock.

THE APPERLY FEEDER,

For Second Breaker and Finisher Cards.

This machine was originally brought to this country and introduced against great opposition by the founder of this concern, the late Geo. S. Harwood. Today there are about 15,000 machines of our construction running in this country and Canada. We have greatly improved the machine. It is today an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the KEMP POSITIVE GEARED TRAVELER and the STANDARD TRAVELER with all other recent improvements.

THE BRAMWELL PICKER FEED,

For Burr Pickers, Mixing Pickers, Fearnaughts and Lumpers.

We consider our improvements in picker rooms of the utmost importance for up-to-date manufacturers. In fact, wide awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest Bramwell Picker Feed is built to handle all kinds of stock in any quantity with evenness and without injury to the staple. The extensive introduction of our feed in first-class picker rooms has led to the successful introduction of

THE SPENCER AUTOMATIC STOCK OILING MACHINE.

This is a modern device for oiling the stock automatically on its way to the picker from the Bramwell Picker Feed, superseding the wasteful, dirty method heretofore in use. Because of the accuracy of this method and the fact that the oil goes on the stock only (instead of the floor and walls) there is a large saving of oil, and the stock is at the same time more evenly oiled and much better prepared for the carding process.

THE MODERN BRAMWELL FEED FOR WOOL WASHERS AND WOOL DRYERS.

The scouring and drying of stock is today recognized as a very important part of the manufacture of textiles, especially in worsted mills. Our feeds are recognized as the standard for properly feeding stock in the grease or wet stock with absolutely no injury to the staple, with evenness and in sufficient quantity and in the best possible condition for economical scouring. There have been other feeds offered for this class of work, but after clogging up and giving all kinds of trouble most of them are today in the scrap heap, having been replaced with our feeders.

THE KERSHAW WEB FEED AND WEB TRAVELER ATTACHMENT.

Where the stock being handled in a card room is so low and short that a drawing cannot be made without excessive twisting, even where the **Kemp Positive Geared Traveler** is in use on the **Apperly Feed,** then the Kershaw Web Feed is the best machine for the purpose ever put on the market. It takes the stock off the first or second breaker in a soft web about six inches wide and feeds it to the next card in the best condition for further carding. We are sole agents for New England.

REPAIRS AND IMPROVEMENTS FOR OLD FEEDERS.

We have not been standing still all these years and the feeders we are building today are modern and up-to-date but these improvements and attachments can be placed on older feeders of our construction, greatly to their benefit. We do not hesitate to claim that **no outlay will show a greater return** to a manufacturer than money spent in bringing your Bramwell and Apperly Feeds thoroughly up-to-date.

APRONS OF ALL KINDS.

We build about thirty different styles of spike aprons adapted to the various kinds of stock our feeders are called upon to handle. Our policy is and will be to put into our aprons the **best** materials and workmanship money can buy. We know we could make cheaper aprons by using cheaper materials and less expensive labor and it would take manufacturers some years to find us out. The apron would LOOK nearly as well but would WEAR only two or three years instead of from five to ten or twelve. Do not trust the man who says he can sell you aprons cheaper than we can. He can do it (and so could we) but you pay the bill in the end. The best is none too good and is the cheapest in the long run.

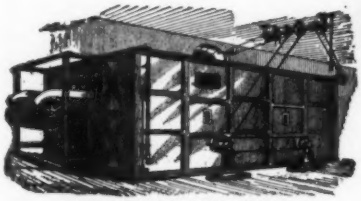
Call on us for particulars and information about all matters relating to Feeding Machinery.

GEO. S. HARWOOD & SON,

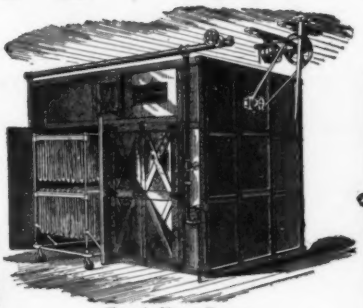
53 STATE STREET, BOSTON, MASS.

"HURRICANE" DRYERS AND FANS

For WOOL,
COTTON STOCK,
YARN, STOCKINGS,
UNDERWEAR,
Etc.



Cotton Stock and Wool Dryer.



Truck Yarn Dryer.

Write for Booklets.

"Hurricane" Fan, Style No. 2.

CARBONIZING,
BLEACHING,
OXIDIZING, CHROMING and WASHING MACHINERY.

PHILADELPHIA DRYING MACHINERY CO.
6721 Germantown Ave., Philadelphia, Pa.

Fairbairn Lawson Combe Barbour, Ltd.

LAWSON BRANCH,

Hope Foundry. **LEEDS.** **England.**

MAKERS OF MACHINERY FOR

PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE

AND OF

Special Machinery for the Manufacture of Twines,

ALSO OF

GOOD'S COMBINED HACKLING AND SPREADING MACHINE,
LONG REACH SCREW-GILL DRAWING FRAMES,
CHAIN-GILL DRAWING FRAMES with Apron Head,
PATENT HIGH-SPEED HORIZONTAL AND AUTOMATIC SPINNING FRAMES FOR MANILLA,

AND OTHER

Special Machinery for the manufacture of Rope Yarns and Binder Twine.

IMPROVED LAYING MACHINES. HASKELL-DAWES TUBING TWISTERS
BROWNELL'S PATENT TWISTING AND LAYING MACHINES FOR TWINE.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

HAVE YOU A COPY OF

THE SHEAR BOOK?

Should be on file in every mill office

A 44-page work on Shears
Tells how to order new parts
Or have old ones repaired

Free on request

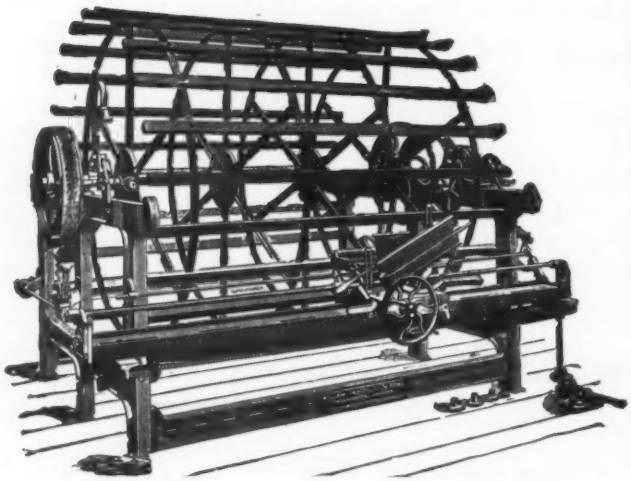
PARKS & WOOLSON MACHINE CO

SPRINGFIELD VERMONT

Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm Whiteley & Sons Ltd

LOCKWOOD, HUDDERSFIELD.



WARPING MILL WITH PATENT SECTION DIVIDER.

Makers of all descriptions of Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines,

Hydro Extractors. Warp Sizing.

Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

Second-hand Tentering Machines in good repair at low prices.

July, 1905, with a business growth to such an extent that more room is absolutely necessary.

At your service if you will

Call or write and I will

Oblige you with information of details and practical results on

Bobbin and cop winding and other machinery that is manufactured here and

Kept in touch with the requirements

Always producing the work that is correct,

Letting nothing go out

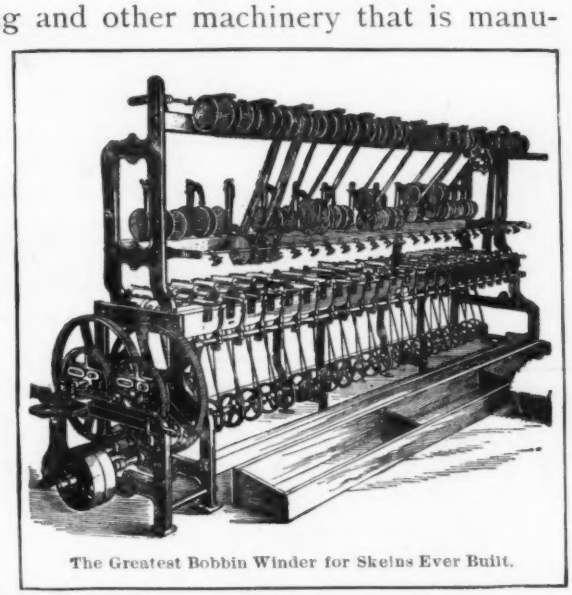
That is not satisfactory before delivery.

Every means are used to

Manufacture winders, spoolers, warpers, beamers and other textile machinery

Up to the standard of reputation

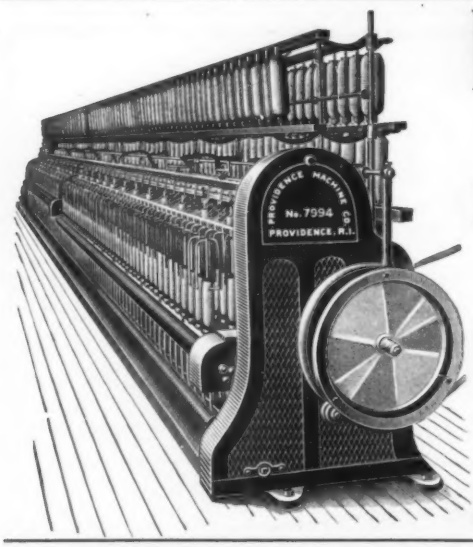
Secured by hard and earnest efforts and guaranted to give results satisfactory in every particular.



The Greatest Bobbin Winder for Skeins Ever Built.

Textile Machinery

2824 N. 4th St., Philadelphia, Pa.



Providence Machine Co.

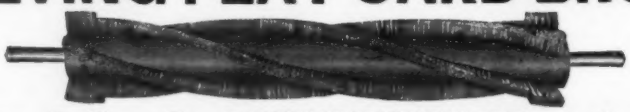
Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

REVOLVING FLAT CARD BRUSHES



S. A. Felton & Son Co. FOR USE ON ALL MAKES OF REVOLVING FLAT CARDS Manchester, N.H.

Watson Textile Motors

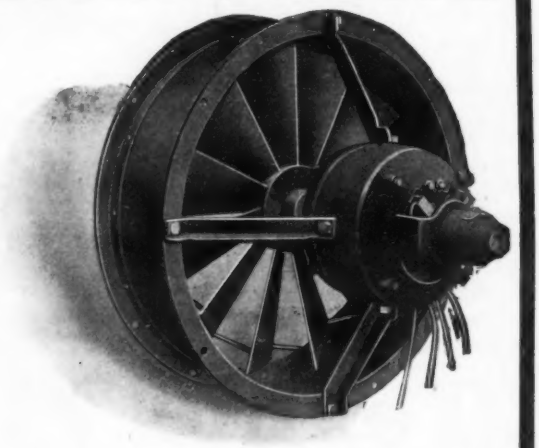
Eliminate Guess Work

Because they have been designed for the work by engineers who have made a careful study of textile conditions. Because they are adapted to the work, they do it better and more economically.

Watson Motor Driven Ventilating Fan Outfits are furnished with fans of either the straight or curved blade types.

Wound for any voltage.

ALL SIZES



WATSON TEXTILE MOTOR DRIVING VENTILATING FAN.

WATSON TEXTILE MOTORS

Manufactured by . . . THE MECHANICAL APPLIANCE CO., Factory: MILWAUKEE, WIS. N. Y. Office: 39 Cortlandt St.

Standard Spinning Machine Co.

BUILDERS OF

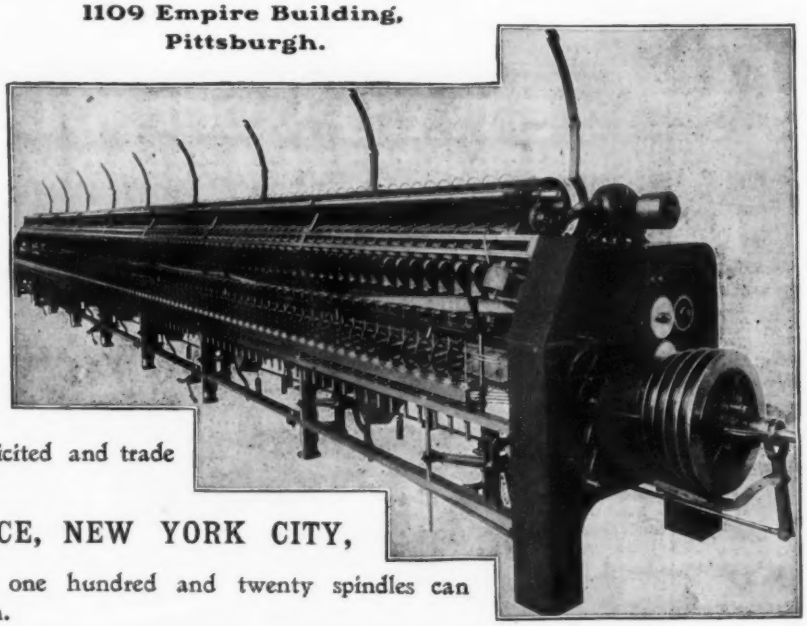
Spinning Frames

Under the Breese Patents

For Wool Spinning

and other Fibrous Materials.

1109 Empire Building, Pittsburgh.



Correspondence solicited and trade invited to

46 PARK PLACE, NEW YORK CITY,

Where a frame of one hundred and twenty spindles can be seen in operation.

Cool and Healthy Operatives

turn out more and better work and thus earn more money for employers

This is one more reason why so many of our leading mills are installing

Barney Compound Ventilating Fans

which remove impure air, dust, smoke, gases, etc., and bring in any desired quantity of pure fresh air.

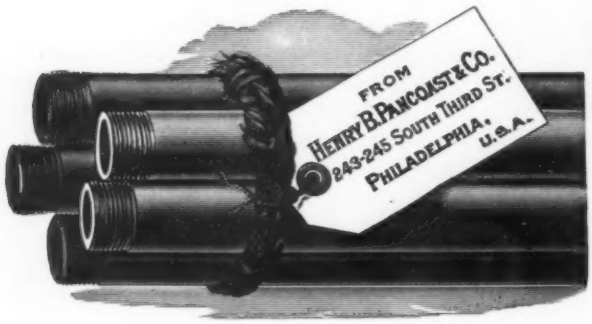
We are experts in Ventilation, Heating, Cooling and Drying. Our long practical experience and Barney Fans form a combination that produces the right results.

Ask us for more facts and names of firms, corporations, municipalities and individuals for whom we have executed difficult orders.

BARNEY VENTILATING FAN WORKS,

Albert B. Franklin, Proprietor. 165 Fort Hill Sq., Boston, Mass.

"STEEL MIXTURE"
BOILER DOOR ARCHES AND FIRE BOX BLOCKS
TONGUED & GROOVED
PATENT BACK COMBUSTION CHAMBER ARCH
ARCHES MADE FOR ONE OR MORE DOOR OPENINGS
McLEOD & HENRY CO. TROY N.Y. U.S.A.
MANUF'D BY
McLEOD & HENRY CO.
INQUIRIES SOLICITED
TROY. N.Y. U.S.A.



Manufacturers of and Dealers in

WROUGHT AND CAST IRON PIPE

for steam, water and gas.

BRASS, COPPER AND LEAD PIPE.

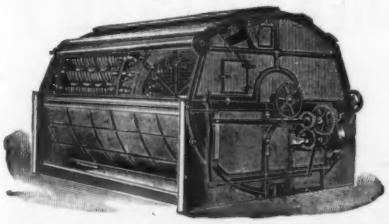
Iron and Brass Fittings, Valves, Etc.
Iron and Brass Railing and
Awning Fittings. . .

Steam and Hot Water Heating Apparatus.

Steam Specialties, Pipe Fitters' Tools, Etc.

PIPE CUTTING A SPECIALTY.

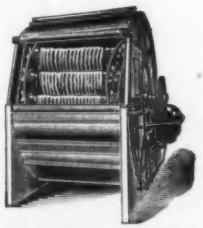
SKEIN AND SLUBBING MACHINES



SAVES

75% in Labor.
30% in Winding.
Steam and Dye Stuffs.
No Friction.
No Tangling.

CAPACITY
50 to 700 lbs per batch.



THE KLAUDER-WELDON DYEING MACHINE CO.

AMSTERDAM, N. Y.

Builders of Machines

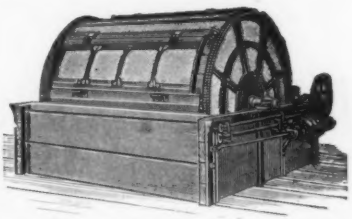
For Skein—Worsted, Slubbing, Cotton and Silk.
" " and Warp Mercerizing.
" Raw Stock Cotton, Wool, Waste and Rags.
" Garments Underwear, Hosiery and Caps
" Sulphur Colors—Raw Stock, Skein and Hosiery.

RAW WOOL AND COTTON MACHINES.

CAPACITY
200 to 1000 lbs per batch.

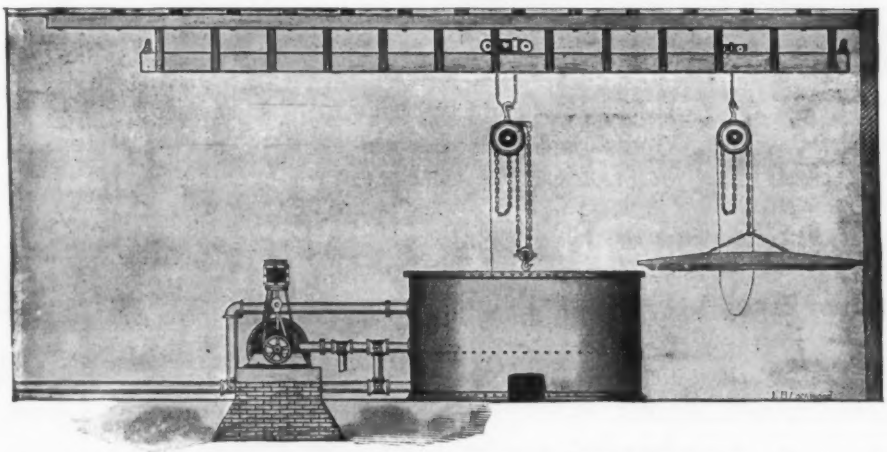
SAVES

50% in Labor besides Steam and Dye Stuffs. Practically indestructible. Leaves stock in perfect condition.



VACUUM DYEING MACHINE CO., CHATTANOOGA, TENN.

RAW STOCK, YARN AND HOSIERY DYEING MACHINES



OFFICE OF TREMONT & SUFFOLK MILLS, LOWELL, MASS., Jan. 14, 1904.

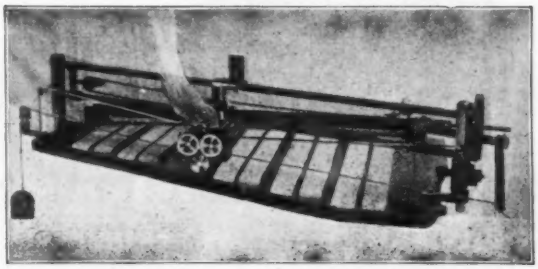
VACUUM DYEING MACHINE CO., Chattanooga, Tenn.

GENTLEMEN: Replying to your inquiry in regard to what we think of your Raw Stock Dyeing Machine, would state that we have been using one about six months, with very satisfactory results, the dyeing being level, and the stock left in first-class condition for spinning. Can give your machine no better recommendation than to say, we think so well of it that we have just placed an order for two additional machines.

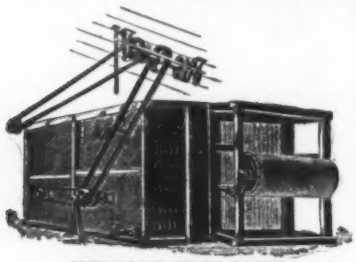
Yours truly J. J. CONNELL, Agent.

"20th CENTURY" MACHINERY

Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear. Carbonizers, Ventilating Fans, Yarn and Wool Scouring Machines, Cloth Washing and Dyeing Machines, Tom Toms, Chroming Oxidizing Machines.



WEB FEED.



AUTOMATIC STOCK DRYER.

We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

AMERICAN DRYING MACHINERY COMPANY,

19th AND WESTMORLAND STS., PHILADELPHIA, PA.

ALEXANDER & GARSED, Charlotte, N. C., Southern Representatives.

AITON MACHINE CO.

ENGINEERS AND MACHINISTS

GARDINER C. SIMS, President.
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ARTHUR S. BEVES, Sec. and Treas.

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NEW YORK.
Factory,
HARRISON, N. J.

Manufacturers of

Cabling and Insulating Machinery

VACUUM DRYING APPARATUS

Rubber Machinery, Including Calenders, Washers, Mixers, etc.

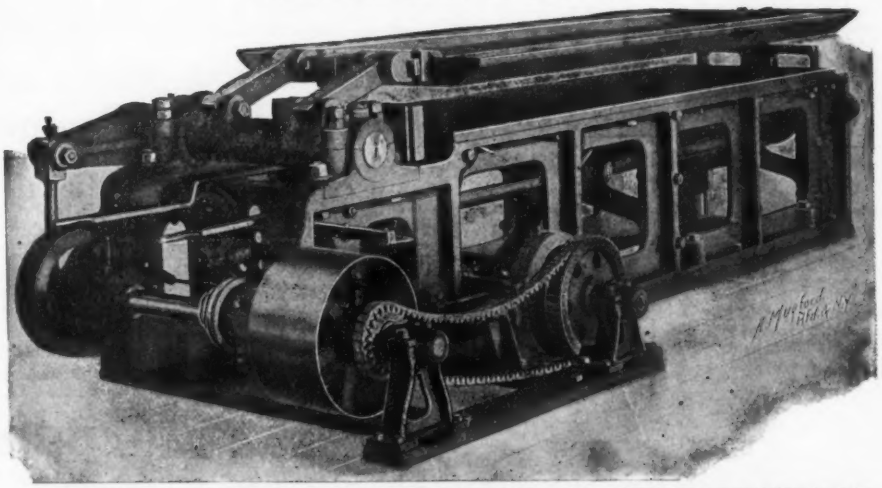
Hydraulic Machinery

Builders of Heavy Machinery. High Grade and Large Castings a Specialty.

INQUIRIES SOLICITED

Farrel Foundry & Machine Co.

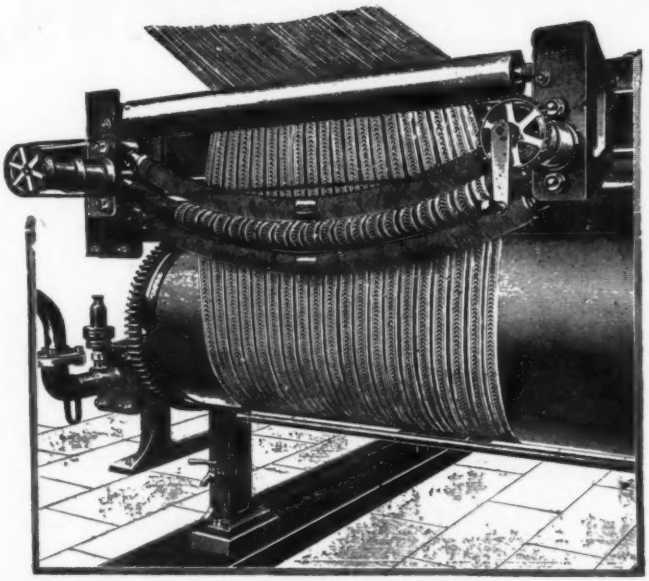
ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls, Machine Moulded and Machine Cut Gearing, to 20 ft. diameter. Heavy Transmission Machinery, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

A PERFECT CLOTH EXPANDER



The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

Patented in United States, Canada, Great Britain and Continental countries. Infringements will be prosecuted.

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Sole Agents for the United States and Canada.

P. & C. GARNETT, Ltd.

Telegrams "Garnett" Cleckheaton — Wharfe Works, Cleckheaton (Yorks), England

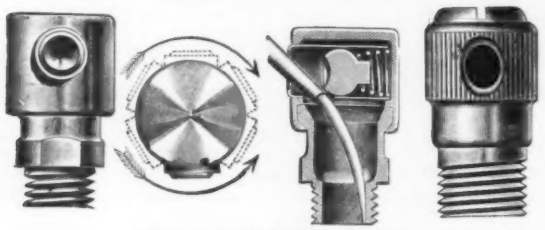
ORIGINAL PATENTEES AND MAKERS OF

The "Garnett" Machine or Waste Opener

Also The GARNETT Patent Knot-Breaker or Preparer.

For preparing waste for the Garnett Waste Openers, breaking knots and other hard substances, old ropes, bagging, etc. No waste puller should be without this most valuable machine which saves the fine clothing of the Garnett Machine.

Original makers of Garnett or saw-tooth wire, in best Swedish Iron, and Cast Steel, with points hardened by electricity. .... Burr Rollers, Breasts for Woolen Cards, Lickerin Rollers, Rag Machines.



Do You Know

that a machine with no protection from dust and grit in the oil holes leading to a bearing is headed for the scrap heap?

DELAY THE DEMISE

USE

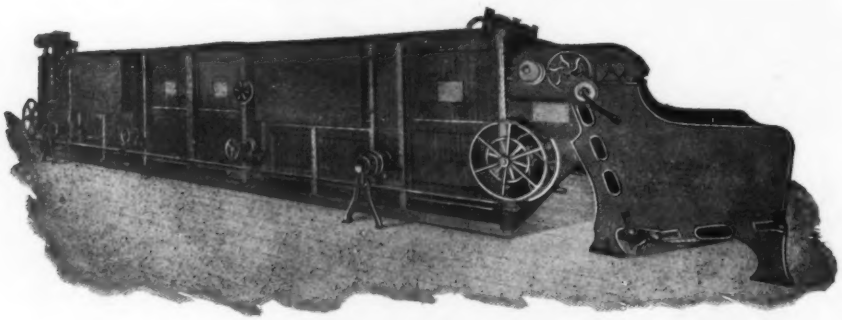
TUCKER DUST PROOF OIL CUPS

POSTAL WILL BRING SAMPLE.

W. & C. F. TUCKER, HARTFORD, CONN.

C. G. SARGENT'S SONS,

GRANITEVILLE, MASS.

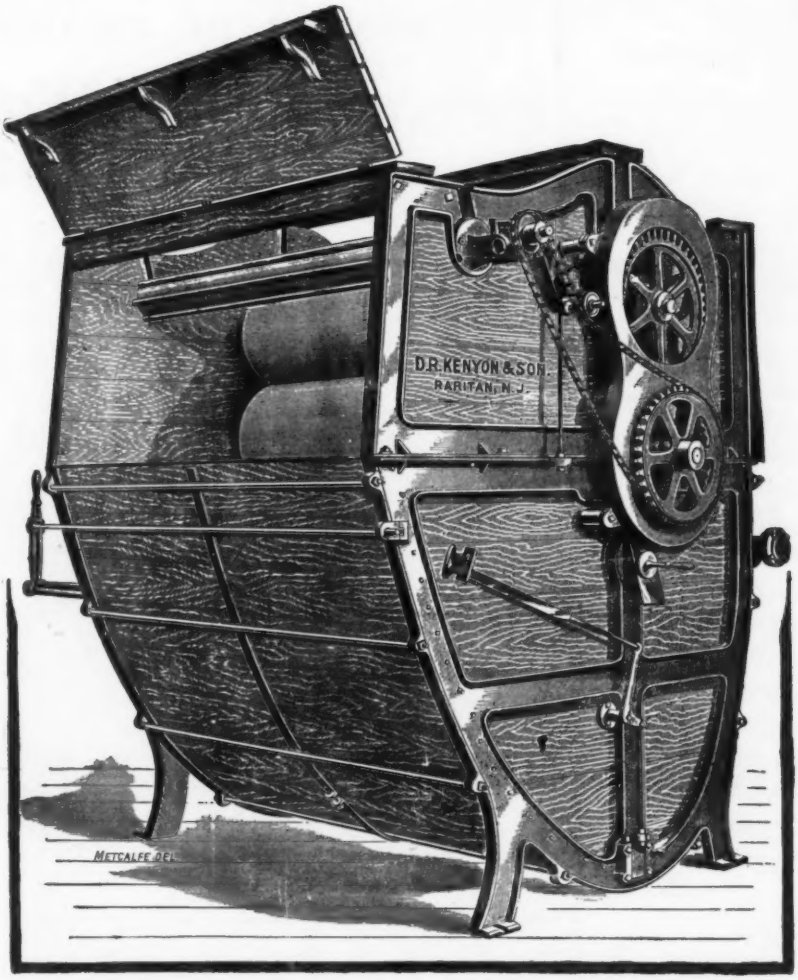


... BUILDERS OF ...

Stock Dryers, Wool Washers,
Wool Dusters, Carbonizing Plants,
Burr Pickers, Etc.

Kenyon's Improved Cloth Washer

FOR FOUR, SIX OR EIGHT STRINGS OF GOODS



BEST QUALITY SOLID ROLLS.

Improved trough and valves, preventing wash of liquor and insuring quick and thorough scouring and rinsing.

D. R. Kenyon & Son, RARITAN, N. J.

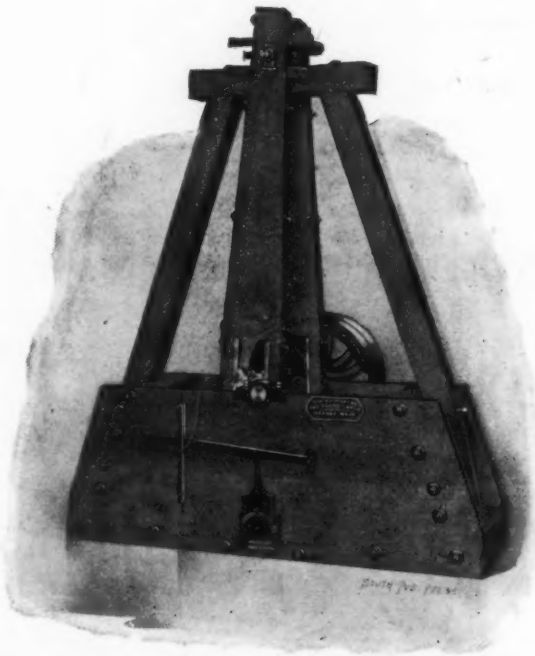
BUILDERS OF WOOLEN MACHINERY

RODNEY HUNT MACHINE COMPANY

WATER WHEELS,
Horizontal and Vertical.
Iron Flumes and Penstocks.
Rotary Fire Pumps.
Centrifugal Pumps.
Head Gate Apparatus.
Water Wheel Regulators.
Rotary Fulling Mills.
Rotary Cloth Washers.
Rotary Knit Goods Washers.
Combined R'y Fulling Mill and Washer for Knit Goods.
Endless Felt R'y Washers and Rotary Felling Mills.
Hammer Falling Stocks.
Dolly Washers.
Crank Fulling Mills.
Crank Knit Goods Washers.
Wringing and Rinsing Mchs.
Reel Dyeing Machines.
Carbonizing Machines.
Bleaching Machines for Chloride of Lime and Peroxide of Sodium,
Dye Tubs and Rinsers.
Wool Washers.
Soaping Machines.
Cloth Winders.

PUSHER OR CRANK

Fulling Mill and Washer



For Scouring and Fulling Knit Goods in the Garment.

Write for our Special Circulars with Large Illustrations and Full Description of Our Machines.

Boston Office,
70 KILBY STREET,
Telephone No. 1522.

Main Office and Works,
ORANGE, MASS.

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Metallic Toothing

GARNETT CYLINDERS

FEED ROLLS LICKERINS
BURR ROLLS

Metallic Breasts for Cards

RECLOTHING

of every description of

Metallic Toothed Rolls

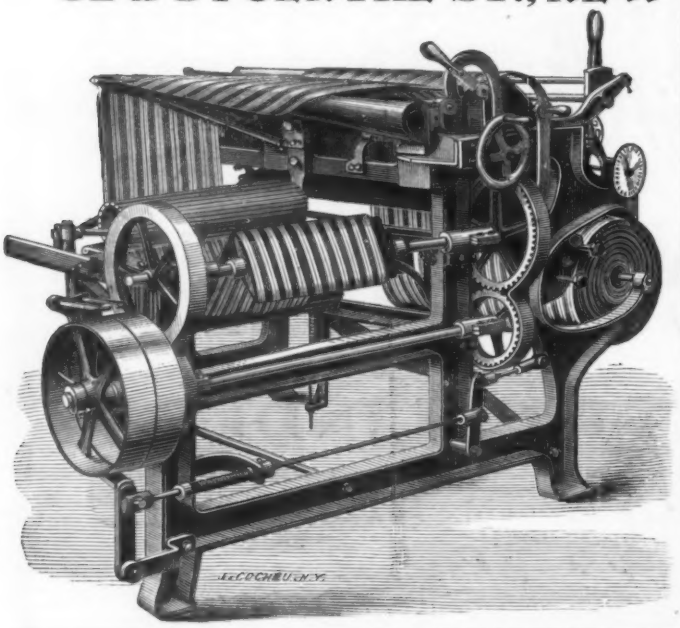
An up-to-date equipment in charge of experienced operatives, backed by the reputation of our house, warrants bespeaking your consideration and orders. Try us. It will be up to us to see that you come again.

The James Hunter Machine Co.

NORTH ADAMS, MASS.

Fabric Measuring & Packaging Co.

82 & 84 CENTRE ST., NEW YORK, U.S.A.



Machines to Print Trademarks

On Cottons, Woolens and Carpets.

Machines to Measure

and imprint the measurement upon fabrics, fold lengthwise and roll into merchantable packages all in one operation.

Prevents claims for short measure.
Marks piece numbers on each package.

A Fully Equipped Machine Shop for General Work.

The American

WROUGHT STEEL

PULLEY

Patented in the United States and Foreign Countries.

SEND FOR BOOKLET.

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

Sold by the Leading Supply Houses all over the WORLD.

The American Pulley Co.,

29th and Bristol Streets, : : PHILADELPHIA, PA.

THE "GREEN-MATTEAWAN"

STEEL PLATE FAN

System of forced or induced draft is what you need to remove dust and waste, to heat or ventilate, remove stringy material, etc.

Its economical.

Its many special features commend it strongly to the careful investor.

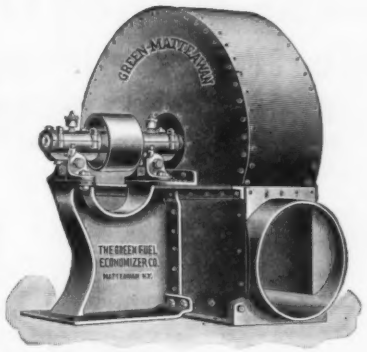
We've been studying the mechanical draft problem for years.

We've met every kind of problem—solved it.

Kept a record of it too.

Now we want to show you what kind of an apparatus this experience has enabled us to build.

Send for Catalog.



THE GREEN FUEL ECONOMIZER COMPANY
MATTEAWAN, N. Y.

THE JACKSON BELT-LACER.

ITS WORK.

A 5" Belt — less than 3 minutes.

— The Cost — One Cent.

Larger Belts in Proportion.

Catalog.

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Formerly the DIAMOND DRILL & MACHINE CO.

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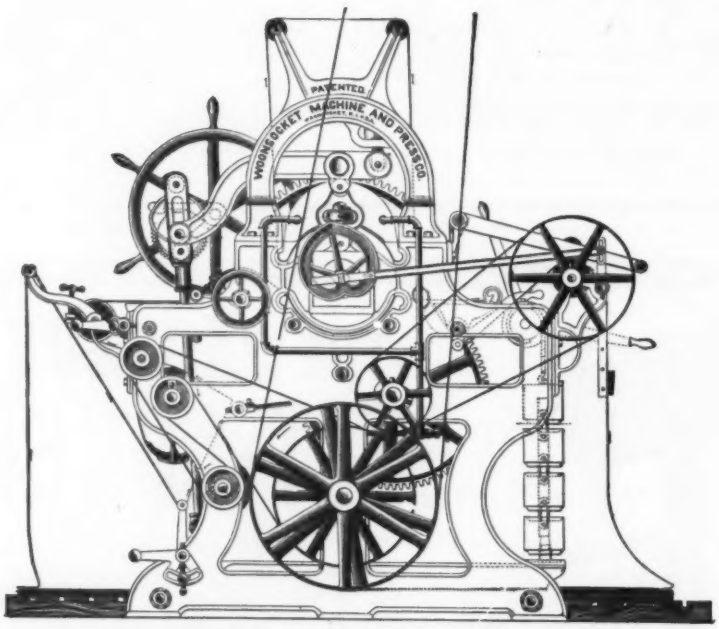
Best Patent Steam Rotary Cloth Press

Four Separate Pressings In One Machine!

The Only Press that has Self-Yielding Beds with Four Points of Contact

PERFECT TEMPERATURE, POWERFUL, SIMPLE



THE WOONSOCKET ROTARY PRESS.

Woonsocket Machine and Press Company

WOONSOCKET, R. I,

DINSMORE

Mill Sewing Machines

No. 9—Portable Foot-Power Rotary Sewing Machine.

It is especially adapted for use in Cotton and Woollen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,
Salem, Mass., U. S. A.

North Chelmsford Machine & Supply Co.

Successors to Silver & Gay Co., Est. 1832.
Successors to No. Chelmsford Supply Co., 1897.

MANUFACTURER OF

Ball Winders, Quillers, Jack Spoolers, Wool Openers, Reels and Special Machines from Drawings or Patterns.

WORSTED MILL SUPPLIES.

Leather Belting, Worsted Aprons, Fallers, Brushes and Comb Circles. Repairing, Covering, Turning, Bossing and Refluting, Drawing and Spinning Rollers a Specialty.

NORTH CHELMSFORD, MASS.

SPINDLES

EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

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. . . SOLE IMPORTERS OF . . .

ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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GEO. HATTERSLEY & SONS, LTD. Makers of Every Description of Looms, etc.
JAMES MACKIE & SONS, LTD., Makers of Flax, Tow, Hemp and Jute Preparing and Spinning Machinery.
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JAMES YATES & SON, Hardened and Tempered Steel Card Clothing for Woolen and Worsted Cards.
LOCKETT, CROSSLAND & CO., Engravers and Builders of Leather Embossing Machinery, etc., etc.
R. CENTNER FILS, Heddles.
GOODBRAND & CO., Yarn Testing Machinery, Wrap Reels, etc.
JOSHUA KERSHAW & SON, Roller Skins, etc.
GEORGE SMITH, Doffer Combs, etc.
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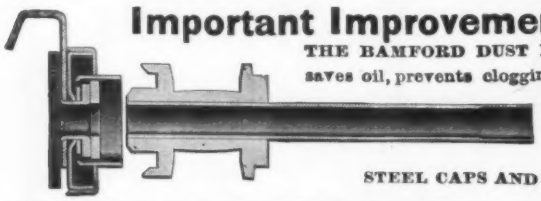
DRONSFIELD BROS., Limited, Emery Wheel Grinders, Emery Fillet and Flat Grinding Machines.
COTTON CORD AND VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

PICK CLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.



Important Improvement in Worsted Spinning.

THE BAMFORD DUST PROOF and SELF-LUBRICATING SPINDLE TUBE

saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, and most important of all, makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Pascoag, R. I.

ALSO MFRS. OF

STEEL CAPS AND SPINDLES. **Caps, Flyers, Tubes, etc., Repaired.**

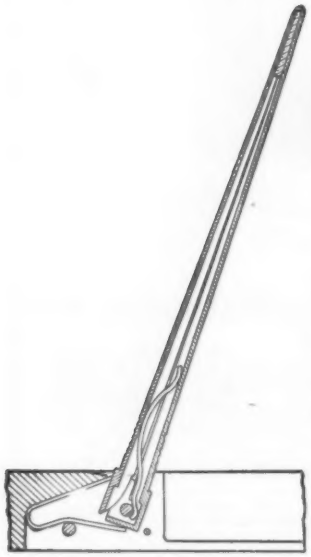
The Prevention of Filling Waste

is assured by using the

NEVER SLIP COP SPINDLE

PREVENTS BROKEN COPS, SMASHES, WASTE, IMPERFECT GOODS AND ALL THE SHUTTLE TROUBLES WITH COP FILLING . . .

The illustrations explain this simple device:—
The spindle is split from the bottom to a point a short distance from the end. When in position to receive the cop, the spindle is of such a size that the cop can practically be dropped over it.
When the spindle is lowered into the shuttle the two parts forming the base are expanded holding the cop firmly in place. The pressure is sufficient to hold the cop on a smooth spindle but the corrugations at the base of the spindle hold the cop still more securely.
The spindle contracts when again raised and the empty cop is easily removed.



SHUTTLE SPINDLE OPEN.

SHUTTLE SPINDLE CLOSED.

Manufactured by the **American Textile Specialty Machinery Co., 415 Broadway, New York**

WILLIAM FIRTH, Pres. THE FRANK B. COMINS, Treas.

AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARDS in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against Infringers and users of Infringements.

J. S. COTHRAN, Southern Representative, Empire Bldg., ATLANTA, GA.

LONG AND SHORT BOBBINS.

Why not lengthen out your Flyers? We can change your 6 in. Flyers to 7 in., or your 7 in. to 8 in. The most successful mills are using LONG BOBBINS. Why will it not mean success for you? Give your frames more lift, lengthen your Flyers, this means more PRODUCTION and less WASTE.

BAKER MACHINE CO., New Bedford, Mass.

Steel Rolls Repaired, Brass Comber Rolls, Bodden Flyers and Pressers.

Vulcan Fibre Roving Can.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one-half pound per inch diameter. SIZE—All cans to any exact size, perfectly round and true. DURABILITY—Superior to any other can.

Also Manufacturers of

HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

James Hill Manufacturing Co.,

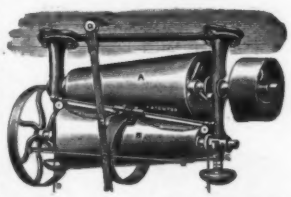
PROVIDENCE, R. I.

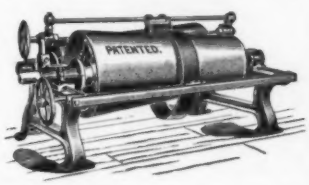
EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER:

National Biscuit Co., Richmond, Ind., 300 sets. Merrimack Mfg. Co., Lowell, Mass. 20 sets. Arnold Print Works, No. Adams, Mass., 11 sets. John & James Dobson, Philadelphia, Pa., 34 sets. Stinson Bros., Philadelphia, Pa., 40 sets. Frederic J. Falding, New York, N.Y., 20 sets.

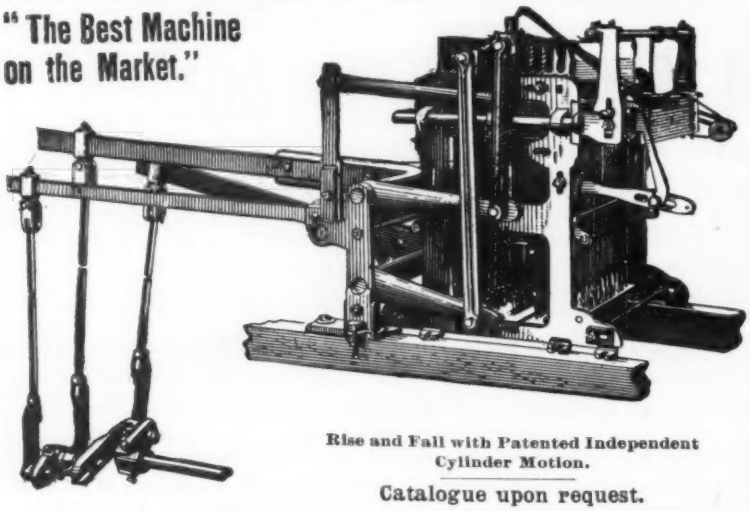




Smith & Winchester Co., So. Windham, Conn., 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

Send to G. FRANK EVANS, 1288 Center Street, Newton Center, Mass., for Illustrated Catalogue.

"The Best Machine on the Market."



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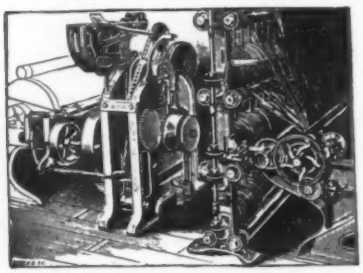
Alexander & Garsed, Charlotte, N. C.



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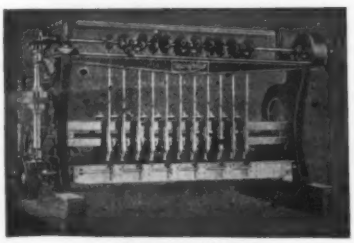

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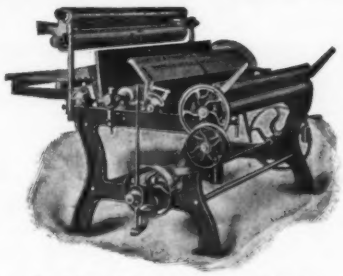

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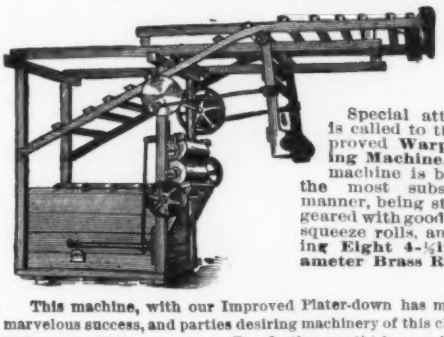
The Reliance Warp Dyeing Machine.



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This machine, with our Improved Plater-down has met with marvelous success, and parties desiring machinery of this class, can make no mistake on ours For further particulars and prices, address

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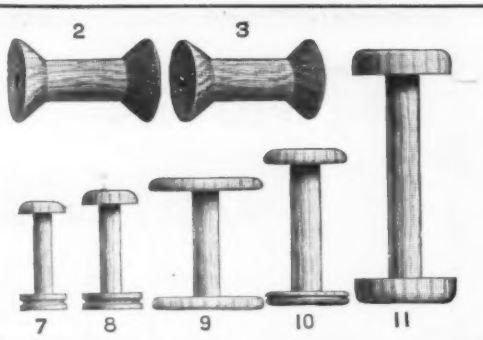
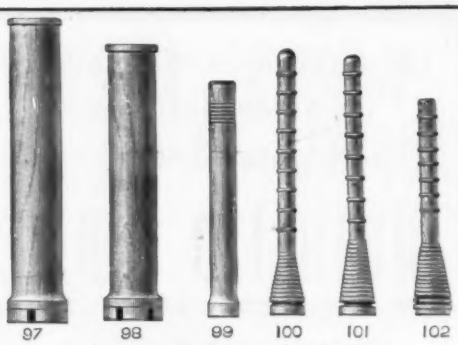
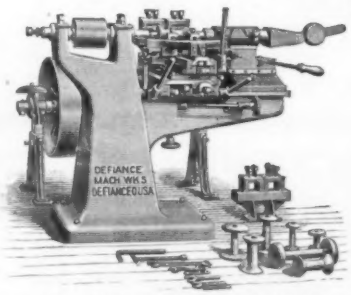




SPOOL AND BOBBIN MACHINERY



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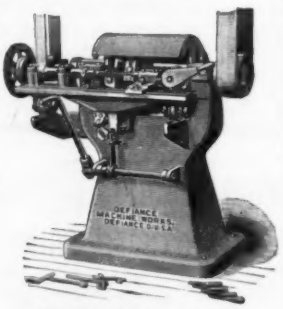
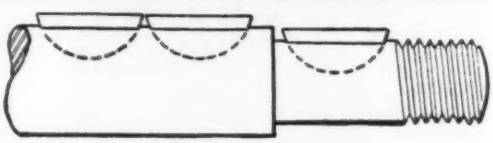


AUTOMATIC BOBBIN LATHE

Key Seating Attachment
FOR
Whiton Gear Cutter



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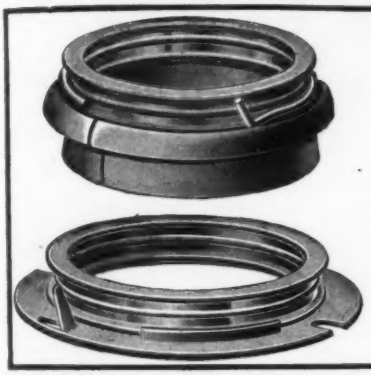

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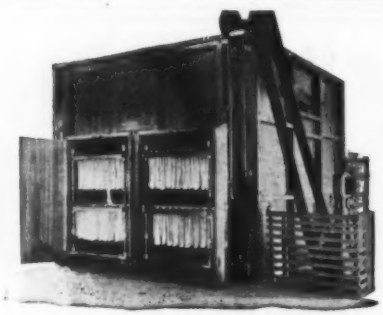

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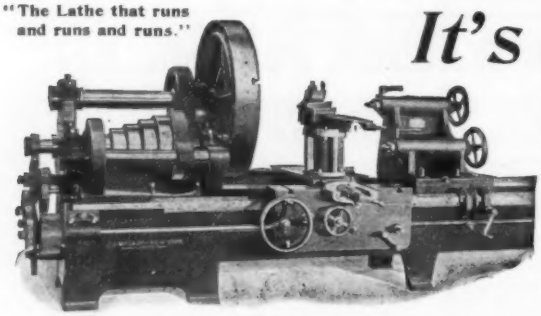

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It's all Fol-de-rol

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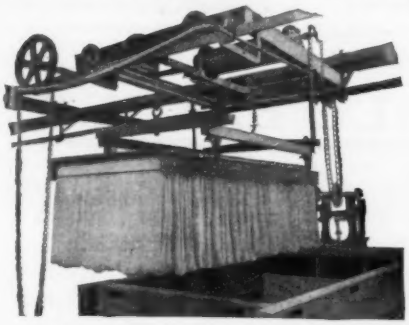
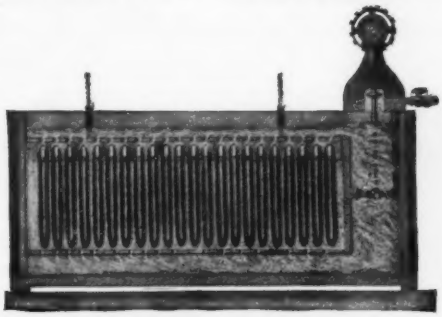
Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904.

A PERFECT SKEIN DYEING MACHINE



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation.

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor. Makes No Waste Whatever. No Friction on the Material,
Requires but Little Power to Operate,
Leaves the Yarn and Slubbing in its Natural Condition.

Built by the **American Dyeing Machine Co., Office 609 Pearl St., Camden, N. J.**

BEWARE OF INFRINGEMENTS.

THE COHNEN

CENTRIFUGAL

Dyeing Machine

U. S. Patent 776,295, Nov. 29, 1904.

Dyes Raw Stock
or
Yarn in Cops, Skeins or Bundles (Warps)

DYES SULPHUR COLORS

without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

ONLY ONE HANDLING

is required to dye, oxidize and hydro extract ready for the drying room.

The Machine may be seen in operation by applying to the American Agents.

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FOR WARPS AND PIECE GOODS

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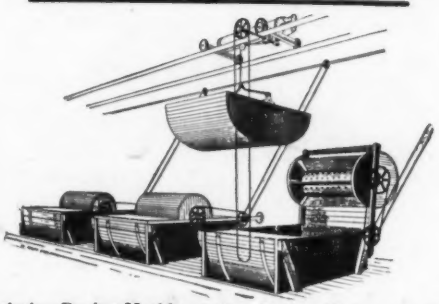

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Spirals and Ledger Blades for Shearing Machines

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American Agents Wanted.

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FIG. 20.

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SOLID CRAYONS
leave no marks after bleaching. Contain no aniline dyes. Are made in ELEVEN colors.
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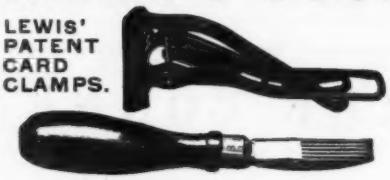
LEWIS' PATENT CARD CLAMPS.



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For Setting Up Bent Teeth of Card Clothing with a variety of all other tools used by Carders and Manufacturers.
Send for circular.

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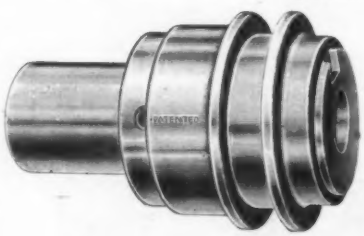

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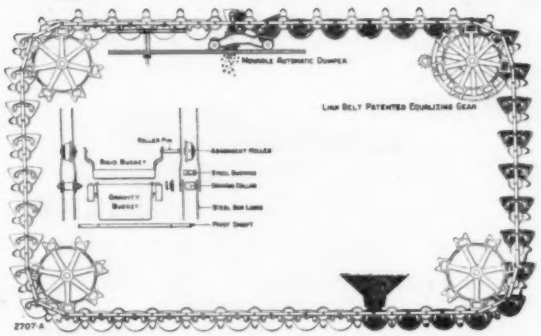

The Dodge Conveyor

(PATENTED)

The Dodge Conveyor consists of non-overlapping gravity buckets pivoted between chains, and smaller rigid buckets secured to the chains in the spaces between the gravity buckets and beneath the gaps which separate them.

The leakage at the loading point, as well as the spill when the gravity buckets separate at the first upward turn in the Conveyor path, is caught by the rigid buckets, and each of these delivers its share of the leakage into the gravity bucket next following.

The Dodge Conveyor is therefore cleanly in operation, simple, safe, practical and durable.

On request we will send full particulars of the Dodge Conveyor, and diagrams of installations where it is giving daily satisfaction.

THE LINK-BELT ENGINEERING CO.

Philadelphia

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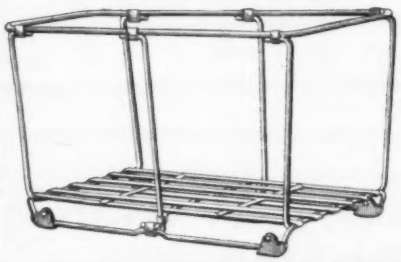

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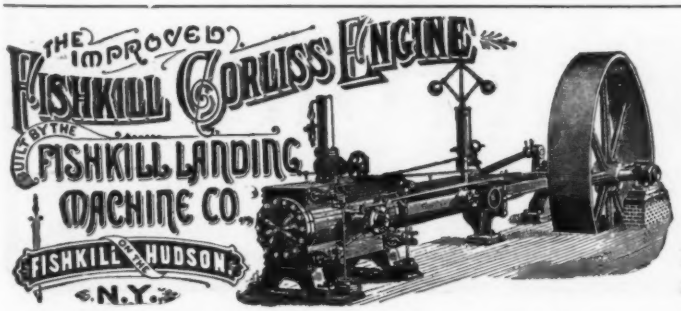

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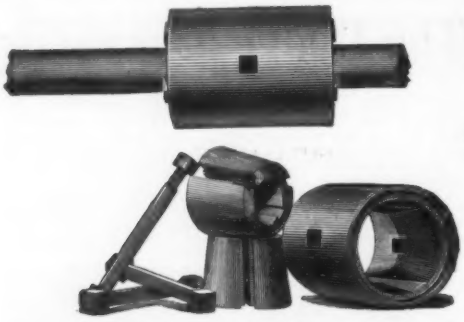

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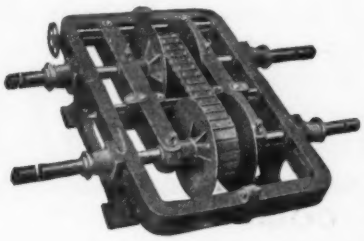

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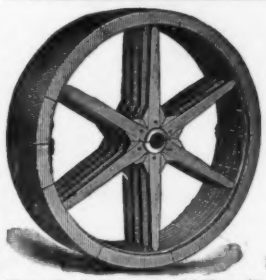

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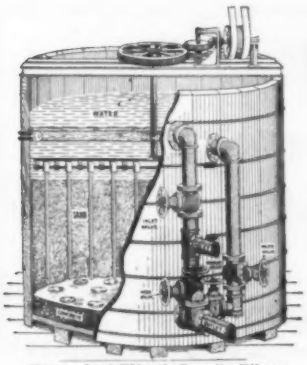

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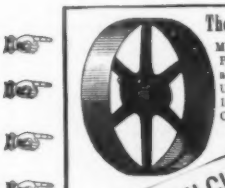

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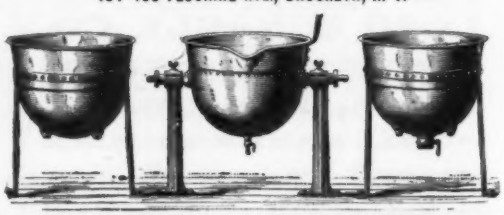

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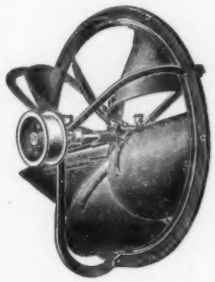

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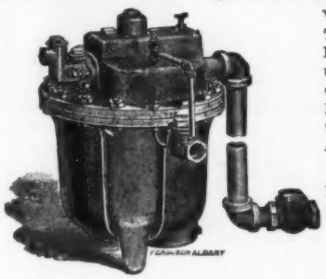

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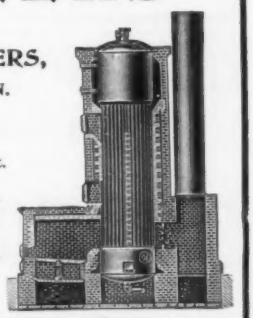

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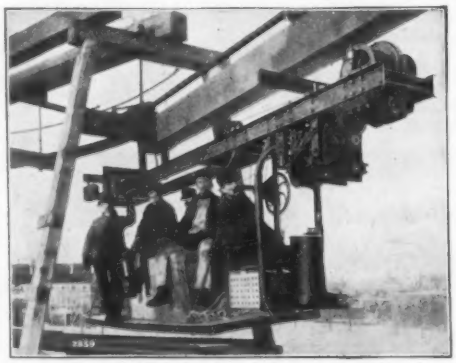

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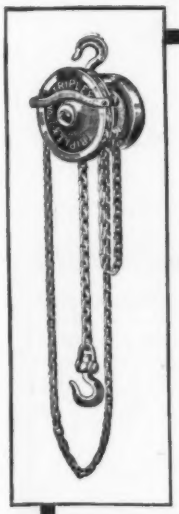

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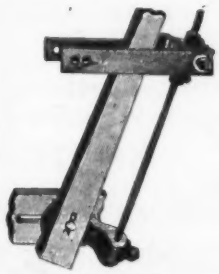

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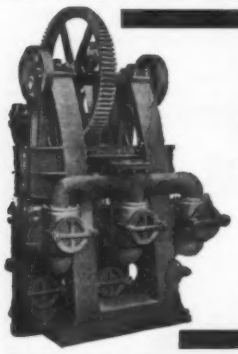

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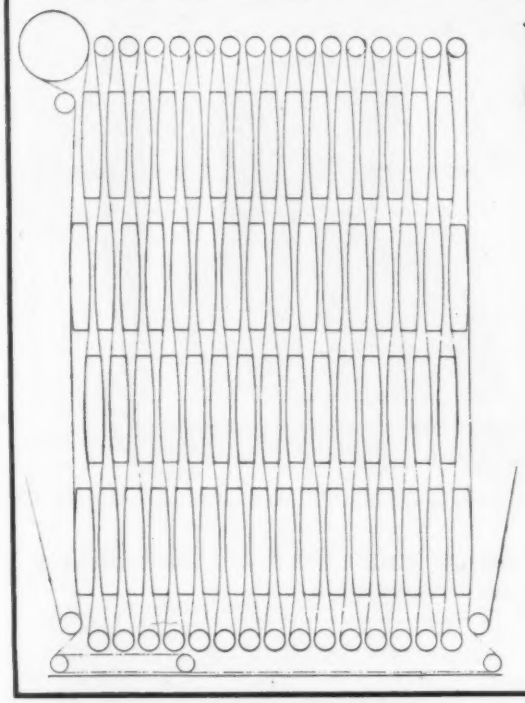

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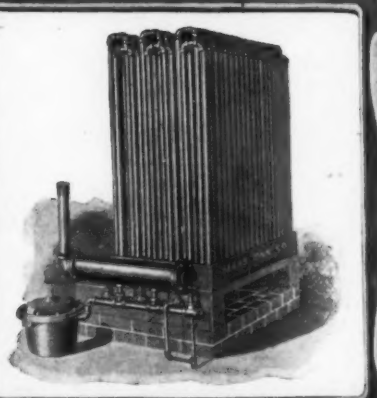

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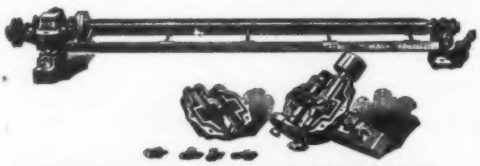

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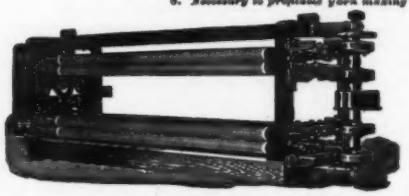

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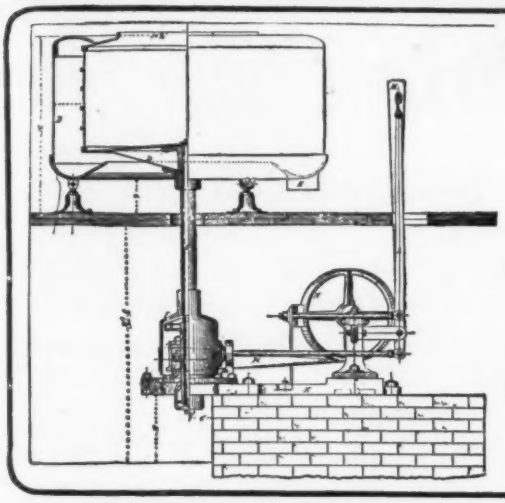

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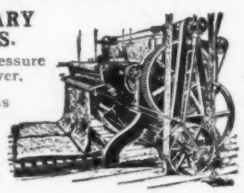

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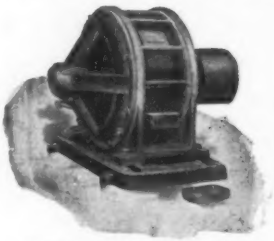

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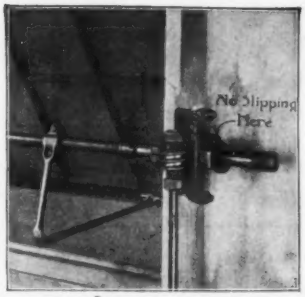

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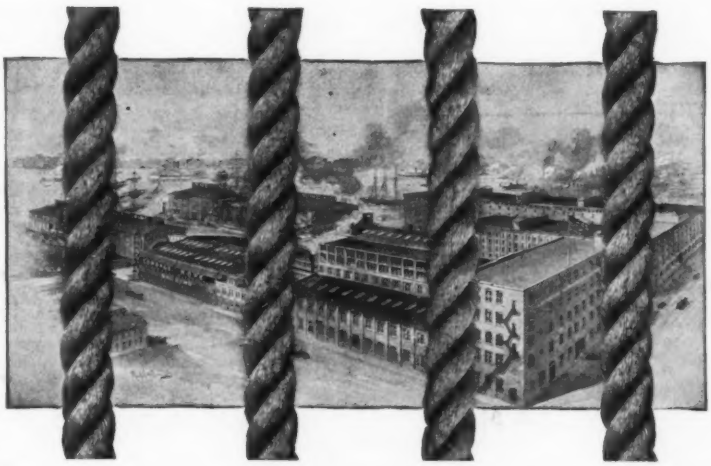

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The Official Directory of the Textile Industries of the United States and Canada,

Is published annually in the spring by LORD & NAGLE CO. It is a book of about 500 pages, well printed and bound. Office Edition $2.50. Traveler's Edition, $2.00.

PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains classified list of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a specialty of textile interests.

PART VI. Buyers' Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

Is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendent and buyer, class of goods made, the machinery, including number of knitting machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

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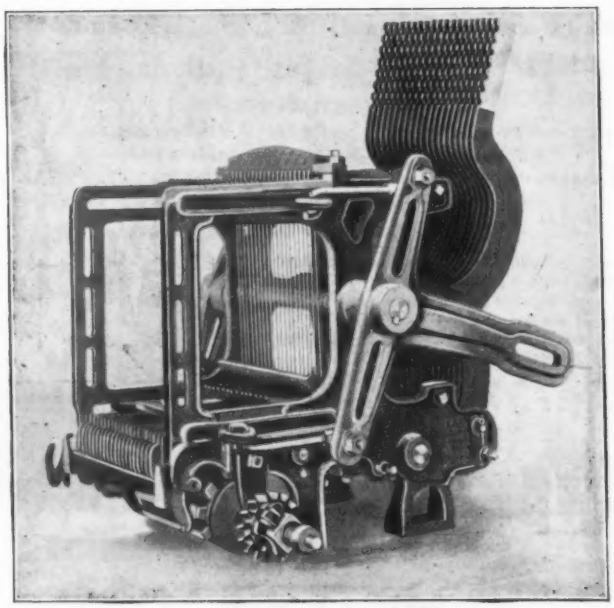

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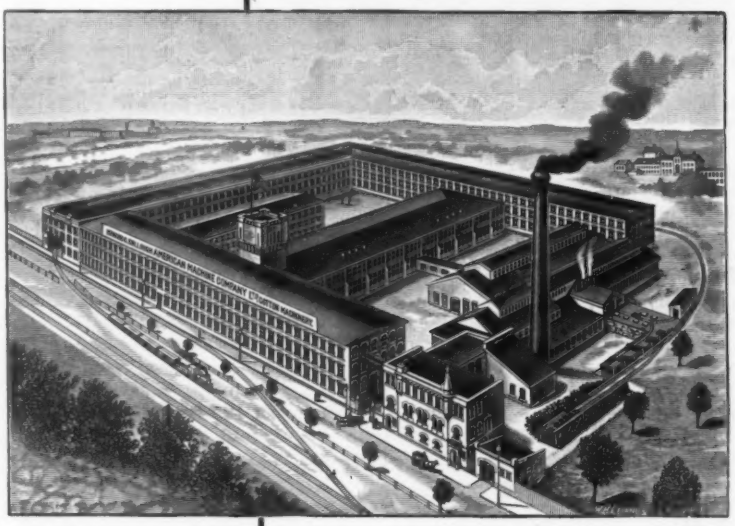

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The Textile World and Textile Record.

VOL. 29. (NEW SERIES.) SEPTEMBER, 1905 No. 6.

Monthly Comment.

The Price of Wool.

Wool is selling in the United States at higher prices than at any time for a generation. It is necessary to go back to the period during and immediately after the Civil War, when exceptional conditions of demand and supply existed, to find as high a level of wool values. Today fine medium territory at 72 cents per pound scoured weight is 15 cents per pound above the average under the McKinley bill, which was repealed in 1894, and 42 cents per pound above the lowest price reached under the free wool tariff enacted in the same year. The average price for that grade under free wool was not far from 33 cents per pound. The domestic clip is estimated by the best authorities at 130,000,000 lbs. scoured weight. Taking the difference, 39 cents, in the prices of fine medium scoured under free wool and at the present time as the average for all kinds of wool, we find that the domestic wool grower is now receiving $50,700,000 more for a year's production of wool than he received under the Wilson bill. This increase in the grower's income depends, of course, upon a continuance of present prices which are subject to conflicting influences. On one hand we have the protective tariff and the increased requirements due to the growth of the country, which tend to keep prices up. On the other hand we have the stimulus given to production by high prices for wool and the natural tendency of consumption to decrease under the same influence, both of which factors tend to depress the price of wool. There is no mistaking the trend among the wool growers. It leads the American Sheep Breeder to exclaim in astonishment:

"How the rams are going East, West, North and South. The number is limited, but the call is limitless."

It will take a number of years of even 72-cent. wool to increase the flocks enough to affect the price of wool. While the supply is being increased the demand is also increasing. A stern chase is a long one, and if no other influence were at work a lowering of wool values by the increase in the supply would probably be a matter of decades, instead of years. The consumer, however, must be reckoned with. The amount he can or will pay for woolen clothing is limited. When that limit is reached he turns to cotton and shoddy goods, which can be bought in unlimited quantities at a price far below the all-wool goods. Here again there are unmistakable signs of the trend among the mills. The rams may be "going East, West, North and South" to increase the flocks and the wool clip, but the manufacturer of cloth from wool substitutes is already on the spot at every point of the compass, working night and day to manufacture from cotton and shoddy cloth for the million at a price that the million will pay.

Trade with Cuba.

The reciprocity clause in the Cuban tariff providing that imports of cotton goods from the United States should be admitted at a reduction of 30 per cent. from the regular rates, went into effect on Dec. 27, 1903. Up to June 30, 1905, the preferential rate had been in force eighteen months. It is therefore possible to make comparisons of the exports of cotton goods before and after the treaty went into effect with a view of learning how our trade has been affected. For the first year under the present treaty and which ended with December, 1904, the exports of American goods to Cuba amounted to $1,011,884 as compared with $507,985 for 1903, when imports from the United States were subject to full rates. It is probably too much to say that this increase was due wholly to the preferential rate. The revival of business throughout the island was unquestionably a contributing cause, but to what extent it is, of course, impossible to state. For the year ending June, 1905, the exports of cotton goods to Cuba were valued at $1,330,260, as compared with $684,212 for the year ending June, 1904. The last named period included six months before and six months after the preference went into effect. Whatever may be the cause there can be no question but the improvement in our trade with the island is of a very substantial character.

No Strike in Lancashire.

The threatened strike in the Lancashire cotton mills has been averted by the following agreement between the employers and employes

(1) That the Federation withdraws its application for a 5 per cent. reduction in the Bolton area.

(2) That the operatives withdraw their application for a 5 per cent. advance in wages in the Federation area exclusive of Bolton.

(3) That the Federation agrees to a 5 per cent. bonus being paid for twelve weeks from the first pay-day in September, paid monthly at all Federation mills exclusive of the Bolton area.

(4) That at the end of twelve weeks the bonus shall lapse and the present rate of wages shall continue up to the 1st of March, 1906, after which date either side shall be at liberty to take whatever action it may think desirable with regard to a wages advance or a reduction.

(5) That the Joint Committees meet together as early as possible for the purpose of framing some scheme for the automatic regulation of wages in the future.

Signed on behalf of the respective associations.

The New German Tariff.

The approach of the date, March 1, 1906, on which the new German tariff is to go into effect, and the ratification of treaties between Germany and a number of other European countries, by which lower rates of duty are to be placed on certain articles imported from those countries into Germany than on the same goods from the United States, has led to much loose talk in this country about the disastrous effect of the new arrangement on our trade with Germany.

An examination of our trade with that country proves that there is no cause for alarm. Germany buys more from the United States than from any other country, her imports from this country having reached $225,000,000 in 1904. Of this trade $143,800,000 was on goods not affected by the new treaties. $36,000,000 consisted of lard, oleo and mineral oils, and $17,000,000 of cereals and other food products. The remainder, $29,200,000, consisted of a miscellaneous assortment of goods which the Bureau of Statistics at Washington has not seen fit to classify. Nearly forty per cent. of our exports to Germany consist of raw cotton, which Germany cannot get anywhere else. She cannot discriminate in favor of cotton from any other country because there is no other country that can supply the German mills with raw material. To impose a duty on American cotton imported into Germany would ruin the German cotton industry, which is almost wholly dependent on America for its supply of raw cotton.

This general survey is not intended to discourage any attempt to secure the most favorable terms of admission into Germany for any class of exports, but is made to show that there is no need of concluding that our whole system of protection to American industry must be upset because the Germans are about to try a dual tariff on a small scale.

Up to 1789 London was the leading cotton market of England, and not till 1795 did Liverpool take the lead.

The flax grown in the different districts of Belgium has each its characteristic odor, and the expert flax buyer can distinguish them by their smell and appearance.

Wool Growing.

An article by Chester Whitney Wright of Harvard University on wool growing and the tariff since 1890, appears in the Quarterly Review of Economics for August. The author attempts to trace the development of the wool and sheep industry in this country, and in a plausible way draws many conclusions which have received the warm approval of such free trade journals as the Springfield Republican and the New York Evening Post. We are not going to deal here with the author's method of reasoning. A fair illustration of it is found where he first admits that no satisfactory comparison of foreign and domestic prices for wool can be made, then makes such a comparison and from it draws the following remarkable two-faced conclusion:

"It is reasonable to conclude that, because of the better condition in which the wool of our only really serious competitors comes to market, the specific weight duties do not, indeed, raise the price of American wool by the nominal amount of the duty, but that the price is raised under normal market conditions, to the full amount of the protection possible and actually given by these duties."

Instead of following Mr. Wright's very complicated argument, we want to call attention to the fact that he has built that argument on a foundation of sand by assuming at the start the truth of his statistics regarding the number of sheep, the production and the consumption of wool. Take the sheep statistics, for example. Mr. Wright's reasoning and conclusions are based on the assumption that the long rows of figures which he presents represent the number of sheep in this country for a series of years, when the truth, which he could easily have learned, is that these figures are simply guesses, and very wild ones at that. Up to 1901 these figures were compiled by the Census Department, but in 1902 the Department of Agriculture evidently became ashamed of the pretense of counting American sheep and abandoned it, as is shown by the following letter from the statistician of the department, John Hyde, in reply to a request for the sheep census for 1901:

United States Department of Agriculture,
July 16, 1902.

I am in receipt of your letter of the 14th inst., and regret very much that I cannot help you at the present time. . . . The Department is engaged at present upon an investigation of the subject of live stock to determine to its own satisfaction as to how far it may rely on the census figures for the census year.

John Hyde,
Statistician.

Deprived of the authority of the department, the National Association of Wool Manufacturers, to which this letter was addressed, supplied the deficiency by taking the opinions of correspondents throughout the world as to whether there had been an increase or a decrease since 1900. Following are some illustrations of this method of counting sheep:

Montana.—Here the local estimates range from 4,200,000 to 5,500,000, while the census figures for 1900 are 4,215,000. It is apparent that there has been a large increase in the flocks; a careful investigation results in estimating the number for the present year at 5,081,000.

Wyoming.—The increase in Wyoming is the most striking. The estimate of last year was 3,580,856. The census report gives the number in 1900 as 3,327,000 and the Board of Sheep Commission reports 4,395,084 for this year. Inquiry leads to the conclusion that this number should be somewhat increased because of the failure of assessors to secure complete returns, and the number has been fixed at 4,614,750, an increase of 1,036,000 over last year.

Decline of Texas Wool Growing.—The most notable change in the above table, as compared with the similar table of last year, is in the State of Texas, where we accepted the Department of Agriculture's estimate (in 1899) of 2,786,688 sheep, and where the census office found but 1,440,000 sheep in 1900.

The estimate of the amount of pulled wool production for 1902 was evolved by a most ingenious arithmetical process.

The census figures, which had been discredited by the department at Washington, were taken to show that, in 1900, of every 100 sheep in the country, 35 were lambs. The same proportion was then calculated for the number of sheep in 1901, based on the discredited census figures and the estimates of correspondents. This gave the number of sheep and lambs in 1901. Then the census of 1900 and correspondents' estimates were used to arrive at the number of sheep in 1902. The number of sheep in 1902 was then subtracted from the number of sheep and lambs in 1901, and the difference taken as the number of sheep and lambs to be accounted for by slaughter, death from disease and otherwise. With a stern determination to be accurate, 2

per cent. was allowed for sheep killed by dogs and whose pelts were not discovered, leaving ninety and eight for the slaughter house. This left 21,165,066 pelts from which the wool was pulled. The average yield was estimated at two pounds a pelt, and thus a total of 42,330,132 pounds of pulled wool for 1902 was obtained.

Further examples of this method of compiling figures could be given, but the foregoing is sufficient to show that the results thus obtained, although possibly the best under the circumstances, are nothing but rough approximations. It is upon such figures that Chester Wright Whitney has based a thinly disguised free trade argument, which is presented to the public under the auspices and backed by the prestige of Harvard College. Free trade journals that neither know nor care anything about the accuracy of either the facts or the argument, accept the conclusions as true, because they are in accord with their own ideas, and spread the falsehood in every direction. It was in this way that the public was deceived in 1892 and induced to try a low tariff experiment which cost the country in money more than did the Civil War.

Building Mills.

Last year the mills of Lancashire were running on short time because of the scarcity of cotton, and there was a general feeling of discouragement over the prospects of England's leading industry. An American cotton crop of 14,000,000 bales changed all this and brought about a period of unprecedented prosperity so that in June, 1905, English manufacturers were making enormous profits with cotton costing 9 cents a pound. This prosperity has encouraged the building of many new mills. The English mills now under construction and projected aggregate over 4,500,000 spindles and 25,000 looms. When completed, England will have 50,000,000 spindles. Probably nowhere does mill building so quickly follow a revival of business as in Lancashire. This is due to several causes. One is the vast wealth of the country. With money seeking investment at low rates of interest, the prospect of large profits in manufacturing makes it easy for promoters to secure subscriptions for the stock of new enterprises. Lancashire has within its narrow limits all but one of the requisites of the cotton industry. A supply of cotton is the missing link, and this is furnished by the United States. There is plenty of iron, coal and labor. The contrast between Lancashire and our Southern States in respect to labor is especially marked, and the difference accounts for the activity of mill building in England and the comparative dullness in the South. In a recent issue of American Industries, G. Gunby Jordan, president of the Eagle and Phenix Mills, Columbus, Ga., writes as follows

> One of the largest textile machine builders in the United States remarked recently that the 5,000 spindle cotton mill which is being erected in Columbus, Ga., is at present the largest new textile industry going up in the state. He further said that a new 25,000 spindle mill being built at Jackson, Tenn., comprises more new spindles than all of the absolutely new cotton mills now being erected in the South. This is in direct and strange contrast with the condition of things only a few years since, when this same machine shop at one time had plans for at least fifty-five new enterprises that were being prepared by its engineers.
>
> In the face of the largest cotton crop ever gathered, of a price for cotton which affords very reasonable profits to the manufacturer, in the face of the strongest Oriental demand that has existed for years and the remarkably good home consumption, there must be some grave underlying reason for this almost utter cessation of new construction in the textile line. Very many of the older mills are making large and important improvements in their properties, adding more and substituting new for old machinery. But in thoroughly new textile enterprises the South seems to be now at a standstill.
>
> The main cause of all this is that we have exhausted the available labor of the South which is capacitated by birth and adaptation for textile work. Hence there is in several of the Southern states much idle machinery. A telegram from New Bedford in the last few days conveys the intelligence that the Mississippi Mills, at Wesson, Miss., has just made a contract with one hundred or more weavers at New Bedford and is moving them to Wesson because they could not find weavers in Mississippi. These weavers are under a contract for a year at $2 each for each working day.
>
> Speaking solely for our mills, as a matter of certainty I can truthfully say that there are in them now, and have been for some months, a good many openings unfilled for competent mill help. Practically all other mills South are in like condition.

Under the conditions thus disclosed it would seem as if American cotton must continue to leave the South in its raw state until the Southern labor supply is materially increased.

A Spot Cotton Market.

The annual report of the Manchester Ship Canal Co. states that 720,000 bales of cotton came through the canal from Sept. 1, 1904, to June of this year, as compared with 511,000 bales for the corresponding period of the preceding year. The net revenue of the company shows an equally gratifying increase. Among the recommendations in the report is one regarding the establishment of a spot cotton market at Manchester. A difficulty in the way of such an enterprise is found in the wide fluctuations in the price of cotton, which at times give the holding of large stocks of cotton for spot business a highly speculative character. On this point the report says:

> When in December last the price of middling American at Liverpool—which earlier in the year had been 18 cents per pound—fell to 7 cents, we appealed to friends in the trade to subscribe $1,000,000 to form a company for importing cotton, in order to form a spot market here. Unfortunately, while we were advocating the scheme the opportunity was lost, but there was evidence that his scheme was a perfectly sound one. If it had been carried out those who subscribed the capital would have made a handsome profit, and a "spot" market in Manchester would have been given a fair start. Doubtless some day the opportunity for establishing such a market would occur again, and we hope then that those interested would come forward promptly and subscribe the necessary capital, because we believe they would make a profit, and would certainly do a great amount of good to the port of Manchester.

Last Year's Cotton Crop.

The New York Cotton Exchange reports receipts of cotton from the South and takings of Southern mills for the year ending Aug. 31 at 13,654,029 bales. Taking the amount still held in the South into consideration the total crop for 1904-5 is placed at 14,000,000 bales. The largest previous crop was that of 1898-99, amounting to 11,256,000 bales. The value of last year's crop is estimated by the New York Exchange at $630,000,000, or 9 3/8 cents a pound. This vast amount of wealth is distributed among the millions of the South. Speculation may divert a part of it into the pockets of others, but in the main it goes to those who earn it, who are people in moderate circumstances. A few years ago 6-cent cotton gave the planter a bare existence, many of them winding up the season in debt. An increase of three or four cents a pound means an advance from poverty to wealth. The following item from the Llano (Texas) News illustrates how the large cotton crop and high prices are distributing wealth among the people of the South:

> Public Weigher, I. White, informs us that he weighed 895 bales of cotton during the month of July. We do not believe that there was ever that much cotton sold here during June, July and August combined.
>
> Best of all, good prices were obtained and considerable more money is in circulation than ever before at this time of the year. It continues to come in and sales in August will most likely run over 1,000 bales.

The larger part of the cotton crop is sold abroad, and as a consequence the increased wealth of the South is being supplied by foreign countries. The following figures show the disposition of nearly all of last year's crop:

American mills	4,734,209 bales
Europe, exported	8,348,931 bales
Japan, exported	332,374 bales
Mexico, exported	70,178 bales

Moire Finish.

The revival of the moire finish which began in the finer grades of silk goods, has been quickly followed by the appearance of this finish on the cheaper grades of silks and on cotton goods. This is the almost invariable course of fashion. The trade looks to the more expensive goods for novelties or the revival of old styles and quickly appropriates the suggestions thus secured for the manufacture of cheaper goods. Of course this is unsatisfactory to the maker of fine goods, who sees his latest styles imitated in cheap fabrics, but unless the maker has embodied some new idea in his goods, which he has taken the precaution to protect by patent, he has no right to complain. In fact, success in textile manufacturing depends largely upon keeping the product of the mill up to date as regards style, and to do this the manufacturer must be quick to adopt the most popular construction and finish. It is in accordance with this basic principle of successful manufacturing that the moire finish on cheap goods has quickly followed its appearance on fine fab-

rics. It is but the revival of a very old process, which was known in ancient times in both Europe and Asia and which, like many other well known effects, enjoys brief seasons of popularity followed by periods of eclipse. In the light of these obvious facts the protest against the use of moire finish for cheap goods and the suggestion that moire finishers who handle cheap goods be boycotted by fine goods manufacturers are both equally absurd.

Exports of Cotton Goods to China.

That the United States is sharing in the prosperity of the cotton trade outside its own borders is shown by the exports of cotton goods which amounted to $49,666,080 last year, as compared with $22,403,713 in 1904, and $32,216,304 in 1903. Seven-eighths of the increase of $27,262,367 over 1904 was due to the expansion of our trade with the Chinese Empire, which showed an increase of $23,670,143 over 1904 when the cotton goods exports to that country amounted to but $4,090,952.

A Wool Substitute.

We have recently received pressing inquiries as to where a supply of Tussah silk waste can be obtained. Large quantities of this stock are being imported and used as a substitute for wool, which it resembles very closely. The fibre when prepared for the card is long, fairly coarse and woolly. It stands the "all wool test," and for all practical purposes cannot be distinguished when mixed with wool in the goods. We understand that some of the largest woolen manufacturers in the country are importing this stock direct, while the supplies in the importers' possession are rapidly taken up. This trade accounts for part of the increase in the imports of silk waste, which amounted to 4,516,628 pounds for the year ending June, 1905, as compared with 1,633,394 pounds for the year ending June, 1903. We expect in our next issue to give our readers further information regarding this material.

The Cotton Industry in the South.

The rapid development of cotton manufacturing in the South during the last twenty-five years and the relatively slow growth of the same industry in the North have led many to believe that the cotton manufacturing business of the North would soon be transferred to the cotton belt. If some firm operating a mill in the North established another mill in the South the press was filled with long articles and editorials regarding the supposed annihilation of the Northern industry by Southern competition. If, perchance, a firm operating mills on low goods in both North and South decided to consolidate its business by transferring the machinery in its Northern mills to one of its Southern plants, a still louder cry of "Southern competition" was raised. If wages were reduced in Northern mills the claim was generally advanced that the reduction was necessary in order to meet "Southern competition." This has been going on for years until it is the firm belief of a large number that the advantages in manufacturing cotton goods in the South are certain to result in the eventual decline of the industry in the North.

During all this time there has been a curious lack of reliable information regarding the advantages of the South. It has been vaguely stated to be "proximity to the cotton fields," but, as a matter of fact, the freight on cotton to Southern mills has in most cases been equal to that paid by Northern mills; in some sections it is higher in the South.

The most reasonable explanation of the advantages in the South is found in the large supply of operatives willing to work long hours for low wages. All the freight charges paid by a mill form but a comparatively small item in the cost of production, but the cost of labor is a factor to be reckoned with and one that is controlling in every part of the world. It makes American competition with Europe impossible and on certain lines of goods has made European competition with India equally impossible.

Last year it was suggested to the authorities of Massachusetts that a knowledge of the actual conditions of cotton manufacturing in the South was essential to an intelligent con-

sideration of certain problems relating to capital and labor which were then before the Massachusetts officials. Agents were selected from the representatives of the cotton mill operatives in Massachusetts to visit the South and secure the desired information. The results of the pilgrimage are found in a pamphlet of 106 pages recently issued by the Massachusetts Bureau of Statistics and Labor. The report is heavily padded with historical reviews of the development of cotton manufacturing and with liberal extracts from the United States census and statistics of immigration, which serve rather to obscure what new information the agents of the Bureau have to offer. But the report is open to far more serious criticism. As will be seen from the abstract in another part of this issue, the agents of the Bureau carried on their investigations under the pretence that they were acting in the interests of Southern manufacturers with a view of supplying the deficiency of operatives in Southern mills. The agents disclaim any direct misrepresentation of the object of their mission to Southern mills, but the words of the report are enough to convince anyone that the manufacturers were misled. Whether there was deliberate deceit or not, the fact remains that officials of Massachusetts secured information from the Southern mills under conditions that in effect amounted to false pretences.

The unwillingness of manufacturers to supply information regarding their business is not confined to the South, and such a disposition is perfectly right and proper. His knowledge of the processes and the cost of production are an important part of a manufacturer's stock in trade and for this reason textile manufacturers in all parts of the world take every precaution to prevent their competitors from obtaining that information. If the officials of the Massachusetts Bureau of Statistics and Labor desire to verify that statement let them try to obtain from the manufacturers of Europe the data they sought in Southern mills. But they need not go outside of their own state for the evidence. Let them try to get information, not merely figures, but facts, regarding the cost of production of cotton goods in Massachusetts mills. They will be met with something more emphatic than the words "impertinent inquisitiveness."

The report contains many statements attributed to mill officials and operatives whose names are not given. Some of them are grossly offensive and of no possible bearing on the subject of the inquiry. From the mass of irrelevant and objectionable matter contained in this remarkable report we have endeavored to select such portions as may contain information of value regarding the conditions of cotton manufacturing in the South. Undoubtedly this part of the report contains facts of value to the trade and we regret that they appear under such discreditable conditions.

Silk Weighting Congress.

A call for a Congress to be held at Turin to consider the question of silk weighting has been issued by Piedmont (Italy) Silk Association. The object of the Congress is to devise means for preventing the sale of weighted silk as pure silk. It is proposed to adopt a mark of some kind for pure silk goods by which such fabrics can be distinguished from the weighted material, the use of such trade mark to be protected by law. The Turin Congress will also consider the competition of artificial silk which has become a serious problem for the Italian trade, three new artificial silk mills having recently been established in Italy.

The Price of Cotton.

The returns of the British Board of Trade for June make a comparison with the same month of 1904, which illustrates in a striking way the effect of the high price of cotton on British trade last year. In June, 1904, the imports of raw cotton amounted to 555,729 cwt., valued at £1,834,905, being about 14.7 cents per pound. In June of this year the average price was but 10.8 cents, the imports reaching 1,555,511 cwt., valued at £3,628,936. The prosperity of the British cotton trade is shown by the exports of cotton yarn and piece goods which were valued at £6,754,348 in June, 1905, as compared with £5,697,947 in June, 1904. This is an increase of £1,056,401, or $5,134,008. The June, 1905, exports were at the rate of $393,913,572. What this represents in industrial energy may be judged by the fact

that even at the higher level of values in America the total product of all the cotton mills in the United States in 1900 was valued at $332,806,156.

Trade With the Far East.

The close of the war between Russia and Japan is calculated to have important results in the textile trade, particularly in the cotton branch. Under Russian control the trade of Manchuria was restricted as far as possible to Russian merchants. This was done by official favors shown to Russian traders, in the form of bank credits, freight rates and in numberless other ways, and by arbitrary regulations against the entry and sale of foreign goods. The treaty of Portsmouth ensures the open door to all and the trade will now go to those who show the greatest energy in placing the right kind of goods at the lowest prices in the Manchurian market.

The control of free markets for cotton goods depends today upon the mill cost of manufacturing. Aside from some almost negligible differences in the cost for freight, insurance and handling, the cotton manufacturers of all countries obtain their raw material on equal terms at the same price. The one who can convert that cotton into yarn and cloth at the lowest cost gets the trade. The cheap labor of Italy is driving English cotton from the markets of Asia Minor. The cheap labor of India and Japan has forced certain lines of English goods out of India and China. The course of trade through the open Manchurian door will be no exception to this rule. The products of high priced American labor will be placed at a disadvantage with Indian and Japanese goods. The war which has just closed has not interfered with the development of the Japanese cotton industry. In this work the Japanese are pursuing their usual policy of adopting the best and rejecting the worst that the most diligent search discloses in other countries.

A few months ago we visited some of the leading builders of cotton machinery in England and saw in their shops machinery for cotton mills in Japan in all stages of construction, from plans for complete mills in the draughting room to the finished machines, ready to ship across the seas. All was of the latest type and the plans for the new mills and their equipment embodied the best features of modern construction. The methods of investigation and selection which are giving the Japanese the best mill equipment are being extended to the selection of the best fabrics made in other countries. They are collecting samples of European, Asiatic and American cotton goods in order to profit by a knowledge of the best fabric construction.

There is but little in the textile industry that can be considered in the nature of a trade secret. This is especially true of the cotton industry. Fabrics can be analyzed so accurately that a small sample of the goods tells what is going on in the mill.

The owners of the Japanese mills will obtain the raw cotton at practically as low a cost as in any part of the world, and convert it by Japanese cheap labor into goods for sale in Asiatic markets where they possess important advantages by reason of their proximity to and knowledge of the Eastern market. Their greatest advantage in underselling competitors will consist in the lower labor cost.

According to the recent report of the British Tariff Commission, the wages in Japanese cotton mills average 15 1/2 cents a day for men and 10 cents a day for women. Foreign visitors to Japanese mills a few years ago reported that the Japanese mill employes were very inefficient, that it took about three of them to do the work of one operative in American or English mills. It is safe to conclude, however, that such methods in cotton manufacturing will not long be the rule, that instead the same high efficiency which was so conspicuous in the Japanese army and navy during the recent war will soon be found in Japanese mills. Japan, however, cannot count upon a continuance of the present low wages. Since 1892 the wages in her cotton mills have increased from 8 1/2 cents to 15 1/2 cents a day for men and from 4 1/2 to 10 cents a day for women. The level is still so low and the labor supply in the East so large that this rise in wages affords no ground for the belief that the Asiatic labor cost will be brought to the American standard.

While theoretically there is free trade in cotton the world over, the Japanese will have a practical advantage in the use of cheap Chinese and Indian cotton, of which they use a large quantity now. Very little of the inferior cotton is used in American mills. It is suited only for the coarse, cheap goods that find a sale in Asia to the poorest people on earth. Owing to their poverty there is no market where purchases decline or cease altogether more quickly when the price is advanced. Consequently, the Asiatic mills can afford to use American cotton for this trade only when it is very cheap. The exports of American cotton to Japan during the past three years illustrate this condition. For the twelve months ending June, 1903, Japan bought 76,000,000 pounds of American cotton at an average of 9 3/4 cents a pound.

During the next twelve months the price averaged 11 3/4 cents and as a result our sales of cotton to the Japanese dropped to 23,000,000 pounds, less than one-third the quantity. Cotton was cheaper the next year and our exports to Japan increased eight-fold to 168,000,000 pounds, for the twelve months ending June, 1905, at an average price of 10 cents a pound. When the mills in this country and Europe were running on short time last year because they could not get American cotton, the Japanese mills kept their spindles busy by substituting the cheaper and poorer cotton from India and China for American.

Because the Japanese mills have all these advantages, it by no means follows that American mills are to be excluded from the Eastern market. Although the bulk of the business is in cheap goods, there is a demand there for the medium and fine grades of cotton, which will increase with the development of China and the certain increase in the Chinese power to buy. We already have a good trade in these lines, our exports of cotton to China for the year ending June, 1905, being valued at $27,761,095.

There is, moreover, a prospect of our gaining important advantages in the Philippines If free trade between the United States and the Philippines is established, we will control that promising market, which now takes cotton goods from other countries to the value of $5,000,000 a year. Such an arrangement between the United States and the Philippines will not be inconsistent with our policy of the open door for all nations in the East, because it will be reciprocal, American goods being admitted free into the archipelago in return for the free admission of Philippine products into the United States. We learn that an attempt to establish free trade with the Philippines is to be made at the coming session of Congress. The Secretary of War has long been in favor of it, and, according to reports by cable, has converted to his way of thinking the Senators and Congressmen, both Democrats and Republicans, who are with him on his personally conducted excursion to the Philippines. The Philippine tariff was tinkered by the War Department with the consent of Congress last winter, with the result that the duty on American grades of goods was raised $6.00 a case. Textile manufacturers should be on guard to prevent if possible the adoption of any jug handle arrangement by which Philippine products are admitted free into the United States, while American goods are taxed in the Philippines.

Wages in France.

A parliamentary committee recently investigated the conditions in the French textile industry, visiting the mills and making personal enquiries on the spot among both employers and employes. They examined the books of the mills and armed with the power of the law were enabled to verify all statements made to them regarding wages and hours of labor. The president of the committee, M. Deon, in a recent debate in the National Assembly, stated that in the silk mills of Lyons the daily wages vary between 50 and 60 cents per day, the higher rate, however, being seldom reached. In 41 weaving mills, making staple fabrics, the daily wage for 300 days in one year averaged 45 cents. Full time is, however, the exception, and the earnings of the workers are usually reduced by lost time. For weaving mousseline the rate is 1.6 cents per meter (1 cent per yard). The daily production of a weaver averages 30 meters, making her earnings 48 cents.

Seasonable Fabrics.

MEN'S WEAR WOOLENS.

This season the conditions which govern the course of the market are widely different from those of former years, and the operations of the buyers have of necessity been changed to meet the altered situation.

A number of the commission houses complain and protest against sweeping cancellations which are daily being received. It is true that many orders recorded were placed by buyers to secure themselves from paying further advances, and therefore subject to revision; but they claim that they were compelled to do this, and that the agents were notified at the time that some cancellations would be made. Hence the existing situation is by no means satisfactory to the mills generally, although some have suffered more severely than the rest. It is probable that a concerted drastic measure against such revisions will result, which will ultimately prove of material benefit to all concerned.

Those who devote their looms to the manufacture of low grade mercerized worsteds have suffered the most heavily, and there is strong evidence that there exists a decided reaction against this class of fabric; not that these goods will be entirely eliminated, but so many lines of poor construction and finish have been put on the market, and largely bought, that the buyer has begun to see the defects and imperfections in this class of merchandise. Notwithstanding the prevalent dissatisfaction, the outlook is encouraging, and there is every prospect of a satisfactory termination, to what appears today as an abnormal situation.

The lines most in favor are the high grade fancy worsteds and it is said that the mills which produce the standard makes, are in better position, and have received less cancellations than any other, with the probable exception of serges.

A number of new collections have been opened and several withdrawn during the month. The position of woolens has materially improved; until recently the fine grades were the only lines which had attracted attention, but it is now stated that the lower numbers have been liberally bought.

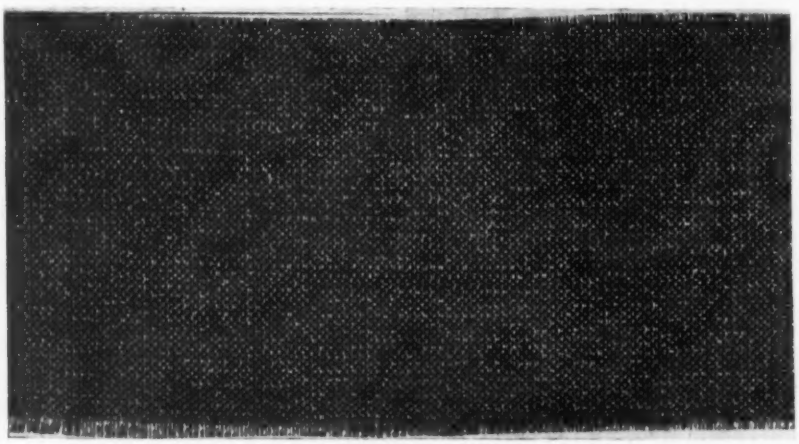


FIG. 1.

There has been strong call for deliveries of fancy woolens booked last season.

The clothiers have experienced good business on fancy overcoats and duplicates on this class of goods are still being received.

Gray is the predominant shade, and the craze for this shade is likely to eclipse that for brown of a year ago.

Thibets, cassimeres and cheviots are not receiving the support predicted for them earlier in the season; but it is probable that a reaction in their favor will result later on.

Hyde and Jacka have withdrawn the $1.25 Kennebee worsteds, the output having been sold up.

J. K. and L. S. Weiner have advanced their Alsace worsteds from $1.42 1/2 to $1.47 1/2.

The American Woolen Company has advanced the Saranac worsteds to 80 cents.

Battelle, Hurd & Company have opened a line of all wool fancy worsteds 13 oz. at $1.20 and a line of 10 oz. tropical grays at 70 cents.

W. J. Battery & Co.'s mercerized worsteds have been practically withdrawn, and these all wool fancies are almost completely sold up.

Thomas Ould is showing a new line of mercerized mixtures, the 13 oz. weight is quoted at $1.30.

H. W. T. Mali & Co. are showing their new lines of Assabet thibets at 75, 80 and 85 cents.

The collection of fancy worsteds opened by the Blackington Manufacturing Co. range all the way from $1.50 to $2.50.

Several additional lines of fancy worsteds are shown by the Earnscliffe Mills.

The Perseverance Worsted Co. has opened its lines of worsted and silk fabrics, which are almost identically the same as those of last year. Prices range from $1.35 to $2.40 with an advance of practically 10 per cent. all round.

Mackintosh, Taft & McKenney have advanced the Stanley 14 oz. mercerized worsteds to 80 cents.

The Coronet Worsted Co. has notified the trade through the medium of a circular letter that all initial business secured on the mercerized lines will be scaled down 20 per cent.

DRESS GOODS.

Spring business is developing very slowly, both with the importers as well as the primary home market.

The lines are not completely opened by the latter, and comparatively little business has been transacted. The cutters are not yet in the market to any marked extent and the few orders that have been booked are for the low grade staple fabrics. Even the immediate requirements of the retailers, who have visited the market in large numbers, have not proved satisfactory, hence expectations entertained earlier in the season have by no means materialized.

Broadcloth is still the most favored fabric and nearly all the prominent manufacturers are sold up for several months to come; prices on the low grades have advanced from 10 to 20 per cent.

Henriettas, which were spoken of as occupying second place, have not done so well, and there is a certain lull in the demand. Panama weaves in the better grades have been bought extensively by the cutters, and moderately by the retailers, but there is every indication that these fabrics have seen their best days, and will be as dead as the proverbial door nail within the next few months. One of the most prominent mills threw on the market a very large quantity, which was offered by the various dress goods jobbers at 37 1/2 cents regular, 36 1/2 cents less 10 per cent. net, and by one jobber at 30 cents net to close.

The feature of the market is the plaid revival. We have witnessed many such and do not think that this will last longer than its forerunners. Another feature worthy of note is the rise of the gray worsted mixtures, gray homespuns and gray crashes in popular favor; this promises to last until and probably through early spring.

Closely allied to the crashes is the light weight hard twisted fabric called Vigoreaux, which again, after the lapse of several years, is coming to the front. Among the high class staple variety are the prunellas, drab d'ete in plain colors and the ombre effects in fancies. Some of these last of French manufacture are exquisite in colorings and design, prices ranging from $1.50 to $2.75. A very successful line of these goods, brought out by Holtz & Hays, is selling through Fleitman & Co. The demand for rain cloths continues good, the most prominent makers being the Bennington, selling through Holden Leonard & Co.; the Germania, sold by Franz Merz through C. A. Auffmoodt, and the Botany worsted mills.

The call for mohairs and sicilians is keeping up remarkably well considering the period of the year. Fig. 1 illustrates a line of fancy mohair imported by Clough, Pike & Co., 46 inches wide, at $1.00. These are well styled sicilians with jacquards in self colors.

SILKS.

Few of the manufacturers claim that they are comfortably situated, but the majority state that the season's development is very

slow; the opinion that generally prevails is that there is a certain amount of reaction, from the activity of last spring, and that the volume of business done is much less than was expected. Up to the present there have been no large lots sacrificed, but unless the demand improves, either curtailment of production or forced sales will be necessary. It is true that a large number of orders are recorded, but the yardage is unsatisfactory. Most of the best imported numbers are very brilliant in color and lustre. Among the latest tartan plaids in taffeta, in dark blue, green, red, black and yellow are prominent.

Persian and rich cashmere colors in chiffon taffeta, in which some of the weaves have a velvet surface that almost equals panne in effect, are shown for separate waists.

Moire in all shades is also one of the leading styles of the season. It is shown in several new weaves, among which is one of a rattlesnake appearance, illustrated in Fig. 2, sold by M. C. Migel & Co., 20 inches wide, at 85 cents. This appearance is produced by flecks of white or color, and the watered face of the goods.

Snowflake effects and broken checks and plaids are also plentiful in the moires, while some of the moire velours have the antique effect.

Warp prints are taken liberally in light grounds for evening wear, and also in dark grounds with antique patterns, single roses without leaf or stem, American beauty with both bud leaves and stem, are a popular design.

Roman stripes are shown by Valentine & Bentley, who state that moderate quantities have been bought for waist and sash purposes.

Broad black taffetas have been largely bought by the cutters as well as the general trade, and form the principal staple in the silk division of the market.

The call for peau de soie, more especially in black, is much improved, while a decline in the call for messalines and fabrics of that finish is noted.

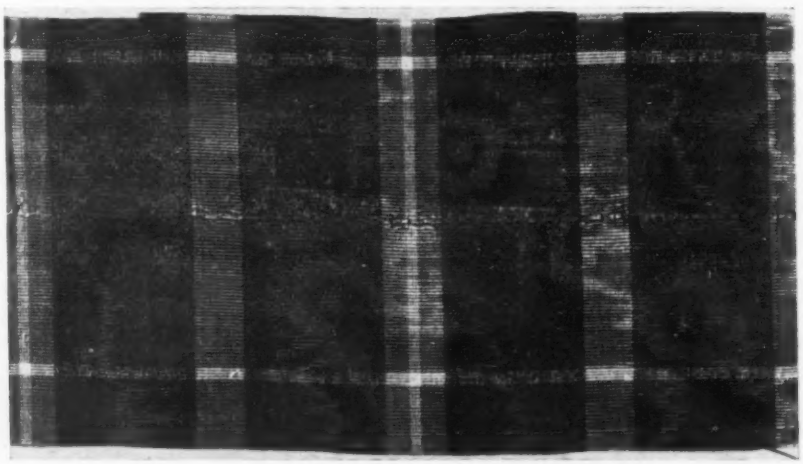


FIG. 2.

Printed crepe de chines in small floral effects is one of the new innovations for evening wear. These are shown by several manufacturers in 24 inch width at about 75 cents.

VELVETS.

Pile fabrics generally are not as strong as last year, and no striking novelties are exhibited, but the chiffon velvet and the chiffon finished velveteen promise to be as popular as ever in the high grade goods, for the better class trade.

COTTON GOODS.

No such activity has been witnessed for a long period of time as now exists in the cotton section of the market. All classes of goods are hard to obtain, and prices are advancing by leaps and bounds.

The mills both in the East and South are working overtime and buyers are hustling

to secure enough stock to keep them going.

The principal factor has been the apparent scarcity of the raw material, and the dilatory methods which buyers have pursued in neglecting to place orders when the price was low. Few anticipated the present advance, as last year's crop of raw material was supposed to be abnormally large.

It is not many months since the talk of burning cotton was prevalent, in order to secure the growers with moderate remuneration.

The growers then overlooked the rapid increase of our population and the immense development of our export trade.

The advance of 1/2 cent a yard by the American Printing Co., which was quickly followed by all their competitors, cleaned the jobbers completely out of standard prints. Ginghams, both dress as well as staple checks, were moved in large quantities, and the market is almost bare of such commodities. Orders are taken by the agents only at value, with date of deliveries uncertain.

Several numbers of wide sheetings are up 2 1/2 cents a yard, and some tickets are entirely out of the market.

WASH GOODS.

Several of the importers have opened their collections, such for instance as Ed. Kampman & Co., Robert McLea & Co., and it is probable that sheer goods on the order of printed organdies and allied lines of that nature will be prominent in the spring demand.

The consensus of opinion predicts that white goods will obtain a larger vogue than ever during the next spring season, and large orders are already booked for such fabrics as India linons, Victoria lawns and French mulls, as well as linens suitable for dress and waist purposes.

LININGS.

The converters of linings are sharing in the general prosperity, and the activity is greater than for some time.

The clothing trade has placed substantial orders for alpacas, mohairs and sateens, while the request from the retail trade for percalines, silicias and cambrics have been of considerable volume.

WOOLEN MILLS IN THE SOUTH.

Editor Textile World Record:

It is one of the anomalies of Southern progress that there should be so few woolen mills in the South. Thirty years ago cotton manufacturing in the South was almost jeered at. There was about the same spirit shown towards iron, and until quite lately towards steel. Birmingham, Bessemer, and other localities are the replies. Except at Norfolk, Virginia, and a little lower down, fruit raising and trucking were nil thirty years ago. Now numberless places in the South send many carloads daily of fruit and vegetables North and West. But wool runs in the old groove. It goes to Boston and Philadelphia as of old to be sold, manufactured, handled by middlemen and brought back to the consumer.

To my mind there is no other such great and almost unexploited field for much of the South as raising early lambs for market North and West and for manufacturing wool. If the great pine belt of the South is not turned into sheep walks, what is to become of it after it is denuded of its timber? Much of it will be an unsightly, irreclaimable waste. The hills of light sandy soil will be gullied and the valleys will be deluged with sand. In some cases this has already happened. It is idle to say that all this land can be devoted to gardening and fruit raising. The true plan is to turn the tracts into sheep walks, putting them into Bermuda grass, red top and white clover, thus affording perpetual pasture.

There are already large quantities of wool raised in the South. The pine woods wool of Alabama, Mississippi and Louisiana has for years had a distinctive title "lake wool," and brings high prices. Why should this bulky article go past our doors in such quantities from Texas and the other States?

Why don't wool manufacturers make this Southern wool into fabrics in the South?

M. B. HILLYARD.

At the close of 1904 there were in China and Hong Kong seventeen spinning and weaving mills with 619,648 spindles and 2250 looms.

MEETING OF THE NEW ENGLAND COTTON MANUFACTURERS ASSOCIATION AT THE HOTEL CHALFONTE.

An exceptionally interesting meeting of this association is promised by the announcement of the subjects to be discussed at Atlantic City, N. J., Sept. 20, and 21, which are as follows:

Advantages of Superheated Steam for Engines and Drying.

Care of Help..

Cotton Combing.

THE CHALFONTE.

Cotton Wastes.

Finishing the Finer Grades of Cottons.

Illumination of Textile Establishments.

International Congress of Cotton Spinners and Manufacturers.

Markets for Cotton Goods in Cuba.

Methods of Receiving and Giving Out Supplies.

Our Production of Fine Cottons.

Some Comparative Data on Moisture Absorption in Cotton and Worsted.

The Cotton Planter.

The Relation of the Manufacturer to the Wholesaler.

The Mill and the Selling House.

The Relation Between Future Contracts and Spot Cotton.

Welfare Work.

Advance copies of papers printed in time will be sent to members upon request.

On Tuesday evening, President MacColl and the vice-presidents will give an informal reception to members and guests in the parlors of Chalfonte, at which it is hoped that all members and guests will be present, without further notice.

Special cars will leave the South Station, Boston, at 6.22 p. m. on Monday, September 18, arriving at Fox Point, Providence, R. I., at 7.36 p. m.

Take the steamer Plymouth, which will depart at 7.45 p. m. stopping at Newport at 10.30 p. m. to take on passengers.

Boat is due to arrive at Pier 18, foot of Murray street New York, at 7 a. m. on Tuesday, September 19. Special breakfast at 8 a. m. on the steamer, and embarking at the same pier on a steamer of the Central New Jersey Railroad Company, leave for Atlantic Highlands at 9 a. m., passing through New York Harbor and reaching Atlantic Highlands inside of Sandy Hook at 10.30 a. m.

Leaving Atlantic Highlands on special train of day coaches at 10.45 a. m., arrive at Atlantic City at 12.45 p. m. Transfer by conveyances to Chalfonte.

Wednesday, September 20, and Thursday, September 21, at Atlantic City.

Friday, September 22, leave Atlantic City in special cars at 8.30 a. m. Barges will leave the hotel at 8 a. m.

The train will arrive at Jersey City at 11.30 a. m. Transfer to Providence Line Wharf, Pier 18, foot of Murray street, or to the Liberty street, or West 23d street ferries, as

may be desired. This will leave the afternoon free to be devoted to visiting places of interest in New York city.

The steamer Providence leaves at 6 p. m. from Pier 18, foot of Murray street. Dinner served on the boat.

Saturday, September 23, arrive at Providence at 5 a. m. Leave Fox Point by train at 6.11 a. m. Arrive in Boston at 7.21 a. m. Those who desire to remain on the boat later can ride by trolley cars to the Providence Railroad Station, and take any train for Boston.

Prices of tickets from Boston to Boston, including transportation, state rooms, care of baggage, meals en route, (excepting dinner on Monday, September 18, and lunch on Friday, September 22) and hotel accommodations, $28.00, from New York, $18.00, and from Philadelphia, $15.00. The full arrangements are under the care of Raymond & Whitcomb Co., the well-known tourist agency, which is a guarantee that everything will be done for the comfort of the party.

The Chalfonte, of which we show an illustration, is a new fireproof hotel opened a year ago this summer, and is one of the best in the country. The upper story is devoted to a library and art collection, around which is a covered promenade from which an extensive view of the ocean and surrounding country can be obtained.

The hotel is remarkable for the elegance of its appointments and furnishings, and the size of its public spaces, and is admirably fitted to meet the wants of a convention of this kind.

It is situated near the steel pier, at about the middle of the board walk, which is five miles in length.

Fine sea bathing can be obtained in front of the hotel, and it is stated that the water is so tempered by the Gulf Stream as to be comfortable at the time of the meeting.

The program, the place of meeting, and the excellent hotel accommodations, all combine to ensure a large attendance.

CHINESE SILK.

BY GEORGE E. ANDERSON, U. S. CONSUL.

The present drift of the Chinese silk trade is unquestionably in the direction of a decline in the exportation of Chinese silk cloth and an increase in the exportation of raw and waste silks. While the exports of silk from China last year show somewhat of a variation from the general movement, all silk men seem to be ready to admit that there is this general movement and the reasons therefor are not far to seek. In the first place, China cannot make the silk goods as cheaply as it once made them. No one seems to know exactly what Chinese silk goods cost. The silk guild of China has long been accustomed to sell goods for what the world would pay provided there was a profit. The cost price was simply what the guild has been willing to allow, the living price of Chinese labor being the only fixed factor in the cost. But foreign buying of cocoons and raw silk and foreign competition in the manufacture of silk goods have caused a change. The price of raw silk in China, even to the silk guild, has increased to a point where it is a serious problem for the Chinese silk men to make a reasonable profit and meet competition abroad.

Chinese manufacturers cling to old methods, and at the present time the quality of the raw silk produced averages poorer than it did before the Chinese silkworms were attacked by disease. In the second place, the silk men of America and Europe understand the world's markets better than do the Chinese and they manufacture to meet that market. On the other hand, the need of raw materials is becoming more and more acute in silk manufacturing centres, and the silk interests are not only reaching out for raw materials from sources they have heretofore drawn upon but little, but they are also employing as raw material waste products which they have heretofore neglected, probably to their loss. There is abundant evidence that China, even at the present time, can produce raw silk, raw silk waste, and similar materials cheaper than any other nation. If this assumption holds good it naturally follows that the United States and other silk manufacturing nations will come to China for these raw materials. These materials will consist of the raw silk, prepared cocoons, and waste of several varieties and grades.

The first point to be regarded in the cocoon line is that there should be the elimi-

nation of the profits of a number of middlemen in the purchase of raw cocoons, and where the drying is done by men on the spot, as will soon be the case in the better silk districts of China, in the dry cocoons between the producing district and the world's markets. Prices paid for raw cocoons and even for dried cocoons in the several districts of China vary in a manner which would seem remarkable to silk men of any other country, but they are explained very easily in China by the difference in monetary exchange between points, by the lack of proper communication and transportation, and by the operations of the silk guild. All these factors in the situation will operate for some time to come.

Last year the price of Shao-hsin dry cocoons in the Shanghai market averaged $118 per 1,025 pounds. A Japanese expert estimates that they can be purchased and dried on the spot for about $96.10 per 1,025 pounds, including commission, drying expenses, inland taxes, freight, packing charges, and other expenses to Shanghai. The margin of profit is great enough to be attractive, but it is plain that there will be little or no profit unless the goods are bought from the natives in the interior directly, and this is possible only by personal representation. It involves trouble, expense, and care, the proper selection of buying districts, and choice of employes, especially scale men and inspectors. Good employes are very difficult to secure. Silk factories in Shanghai send their clerks and members to the districts; sometimes proprietors go in person. Such are the many factories which secure goods at comparatively cheap prices. In spite of the drawbacks, however, personal buying of goods is practicable, and I believe would be very profitable. The purchase of cocoon silk in the field, however, is likely to be more profitable in subsequent use of waste-silk products to be obtained by direct purchase from the grower than otherwise. There are a number of lines of work.

One line which demonstrates that there is a profit between the cost of the cocoons and the price paid for good filature silk is in the existence of the rereeling business. The export of the "hand-reeled silk" from China is far greater than that of the "machine-reeled." All Chinese hand-reeled silks are not of inferior quality, although generally so regarded. Some of them, as the Chin Chi Lin, Huchow-Chi-li-ssu, and Chin Shih Tze, are of very good quality, and when these varieties are rereeled they appear as fine as machine-spun silks, and often are sold as such. The difference in the price of machine-made silk and the hand-made silk is considerably greater than the cost of rereeling, with due allowance for waste. This phase of the business is likely to be very important in the rearrangement of silk matters soon to be realized. But it is to waste silk and dried cocoons that American manufacturers need to give the most attention. The variation in exports of waste silk products from China during the past five years indicates that while foreign silk men were unwilling to go into the importation of such products very extensively at present, they are giving the matter some attention. As a matter of fact, the variation has been due more to the course of Japanese manufacturers than to anything else. America has given the subject of waste silk very little attention apparently, and Europe has not gone into it as extensively as it probably will in the near future. The experience Japan has had with the Chinese waste silk is significant. Japanese waste silk has been used profitably for years. In fact, it became so profitable that it was used in an illegitimate manner, to the loss of foreign silk men dealing in Japanese goods. The result, as shown by official investigation, was that this not only alarmed the foreign manufacturers and merchants, but it also injured the Japanese factories. Even some of the traders in Kobe declined to do business in waste silk manufactures because of the risks involved. The importation of wild silk into Japan gave more difficulties to the Japanese manufacturers and they were obliged to decrease their output temporarily. This failed to give any relief, owing to the rise of price for the raw materials, and they have again begun to import the waste silk from China.

There are many varieties and standards of waste silk which American silk men can study with profit, but the chief varieties are: "Sheng-pi-ma" (when a Chinese silk spinner starts his reel he rolls the thread around his hand until the main thread of the cocoon is

secured, and the part wound is called by this name), "chu-ko" (cocoons not fully developed by the worms), "waste thread" (produced in rereeling, and the quality very good), "feather," "kuai-pen" (the covers of cocoons), and floss silk.

Among these "sheng-pi-ma" is a most promising waste. The "chu-ko" is pressed and used as a material for floss silks. "Feather" is mixed with "silkworm's garment" and bad cocoons, and bleached in pure water after being well boiled, and is used as a material for rough silk cloth by native women. Until quite recently there was no use for the "sheng-pi-ma," except to plaster lacquer or to mix in mud and plaster for walls. Until a few years ago, when they were first exported to foreign countries, their value was unknown in the interior. As cocoon killing and drying have not generally obtained in China, it is the custom with the Chinese producers to begin the reeling as soon as they finish the "breeding." They immediately sell the goods to the middlemen who are waiting to buy them. The season for "sheng-pi-ma" is very short in spite of its large production. Its abundance and the lack of local demand keep prices for this product very low. Last year, notwithstanding the price of silk went up to the highest it probably ever reached in the interior of China, the native brokers bought of the producers this "sheng-pi-ma" waste at 3 cents gold per 8 1/3 pounds for the best quality, and less than 2 cents gold for the same quantity of the inferior quality. Next to "sheng-pi-ma," "chu-ko" and "feather" can probably be used abroad with profit.

THE WORK OF A CONDITIONING HOUSE.

BY JAMES STRAND.

Conditioning houses are institutions that have proved of the utmost convenience and utility in the textile life of the Old World. In Britain, as on the Continent, each great centre has its own establishment for the independent verification of the raw material or merchandise with which the locality is most concerned. To these houses anyone in the trade may repair to have contested opinions as to the merits of goods set at rest, or to have the true composition of goods certified before sending them abroad. Thus both in local and foreign trade the conditioning house is a most valuable adjunct to the mechanism of private business. The examinations are made with scrupulous care by perfectly disinterested experts under systems that afford secure check against error.

The Bradford conditioning house exists primarily, of course, for the convenience of wool traders; as that in Manchester does for handlers of cotton. The Bradford house is municipally owned and is managed by Walter Townsend aided by Emile Townsend, his son, and this gentleman's reputation for technical sagacity is of long standing. Since the house was founded in 1891 many millions of varied tests have been carried out and every day huge cargoes, principally of wool and tops, pass through the institution. The most common of tests is to determine the amount of moisture present in bulk consignments, and to do this it is necessary first to draw samples. As questions are constantly arising as to the orthodox method of drawing truly representative samples of wool it will be worth while to detail with particularity the method practised officially at Bradford. The more so because the most fruitful cause of difference of opinion as to moisture hinges on the way in which samples are taken.

At Bradford it is insisted with emphasis that the wool begins immediately behind the bagging, therefore a representative specimen lot must contain portions of wool from the sides of the bale as well as from the middle. A seam is slit and the expert sampler commences to pull out wool until his bared arm reaches the middle of the bale. The little heap represents the wool fairly from side to centre at the point at which the drawing has taken place. As the moistness may be unequal, the operation is repeated at three or four points upon every bale of scoured wool, waste or noils, selected. Thus about two pounds' weight is drawn from each bag. In sampling tops three balls from the interior are chosen at random. Yarns in hank are represented on the basis of a four-pound sample for 1,200 pounds; yarns on bobbins are tried on the evidence of from 20 to 40 bobbins or tubes; and cones or cheeses are

held to be represented by from 5 to 15 pounds taken at different points from small or large packages respectively. The tests are made in duplicate and wherever a variation exceeding one per cent. is manifested, samples are drawn anew and a reliable average is obtained.

These particulars will perhaps assist buyers of imported material in understanding how certified results are arrived at and will give manufacturers wishful to make private scrutinies for themselves an approved example to follow. Needless to say there is an abundance of apparatus at the Bradford house for drying-off the carefully drawn parcels. There are 66 drying chambers or ovens, heated by Bunsen gas-burners from below. In shape these ovens resemble exaggerated flour-bins; they are circular and are provided with a slotted lid, an accurate beam-scale and a thermometer. A sample weighing one pound (received weight) is lowered into the chamber, where it remains balanced by the pound weight in the outer pan of the scale. Heat is applied up to 220 to 225 deg. F., and moisture is given off until a constant weight is reached. On the arm of the scale from which the material being tested depends, there is an upper pan, outside the drying receptacle, on which weights are added to restore the equivalent of the moisture lost. Thus at a glance it is possible to see what is the weight of water expelled in reducing the material to bone-dryness.

A list here follows of standard allowances for moisture by percentage based on the dry weight. When these are exceeded it is held that buyers have just grounds for complaint.

Wool and waste	16	per cent.
Tops combed with oil	19	per cent.
Tops combed without oil	18¼	per cent.
Ordinary noils	14	per cent.
Clean noils	16	per cent.
Worsted yarns	18¼	per cent.
Cotton yarns	8½	per cent.
Silk yarns	11	per cent.
Cloths, worsted or woolen	16	per cent.

Besides for moisture, a common test is to determine the presence of added oil and insolubles in worsted top. About two yards of sliver from a number of balls are taken until a total of between one pound and four is in hand. The size of the sample is determined by the size of the bulk on which adjudication is required. After fine weighing, the sample is absolutely dried, so that the item of moisture is eliminated. It is then scoured perfectly clean with neutral soap and hot water whose temperature is below 120 deg. F. Again the sample is dried and the loss indicated between the first and second dry weights represents the amount of oil and insoluble mineral in the tops. This finding is then calculated upon the original weight of the sample tested. From three to four per cent. is the normal addition of oil to tops combed in Bradford. An exact quantitative analysis —though not an exhaustive one—of a typical sample of Bradford top shows:

Oil	3.14 per cent.
Insolubles	0.41 per cent.

Similar scour tests are applied in the case of noils, wastes, yarns and cloths with the sole difference that in case of heavy woolen wastes and yarns a little free alkali is added to the lye bath. When raw wool is scoured to determine its net commercial weight, samples between one pound and fifty pounds are taken as a datum.

Questions as to the length, strength, twist and counts of yarn are continually referred to the conditioning house. In worsteds it is usual to take the average of 30 hanks of thread coarser than 2/16s and of 40 hanks if the number be higher. Cotton hanks being one half longer than worsted, a basis of 20-25 of the coarser and 30 of the finer is considered satisfactory. The relative weight and length of these exemplars is then applied to the whole bulk—shortage or overplus being awarded accordingly. In reeling, the tension is intelligently regulated according to the count, quality and style by means of tension weights. Overwrapping is prevented and the driving of the reels is maintained at a rigorously uniform speed. These same precautions are observed in arriving at a correct estimation of the counts of yarn. From two to ten hanks or portions of hanks are taken and are weighed to the one-hundredth of a dram; more hanks being drawn when the variation is abnormal. The count may then be corrected to the theoretical condition of

moisture, or given at the parity of the proved condition of the bulk as received.

Twist is observed on the average of ten or more examinations; single yarns or rovings on the average of twenty. In folded yarns the test is of ten times ten inches which is substantially the evidence of 100 separate inches, and the operation is watched with extreme care. Strength-tests of yarns are performed by power-driven apparatus and recorded on a minimum of five separate leas of worsted, silk or cotton. Cloths, however, are tested for strength on the dead-weight principle and the machines record strains up to 1,000 lbs. Defects in cloth are investigated with an eye to determining their origin, and the weave, make, counts, twist, quality and so forth are revealed by the familiar means. Micro-photography is now employed to give with the perfection of fidelity an indisputable record of the truth. In the way of dissection some painstaking achievements are performed. Threads are unraveled by deft assistants who work with the aid of reflected lights and the ultimate fibres are carefully abstracted, classed and fixed upon suitable colored cards and witness to the precise composition of a fabric.

All these are evidence of pre-eminently practical and helpful work which is performed at astonishingly low charges. Bulk wool is weighed thrice with scrupulous care, sampled and certified, for the price of 37 cents per bale; tops and hanks are charged only at 25 cents per package (which includes a week's free warehousing and fire insurance). The various facts as to yarn strengths, counts, condition and lengths are elucidated at charges varying from 37 to 75 cents. Few tests cost a full dollar though analyses of soap and oil may cost as much as five. Dissections and special recondite searches are made at special but moderate terms. The staff and the premises are so large and well organized and adapted that the work goes swimmingly. The assistance of the Bradford conditioning house is sought to solve disputes arising in many parts of the world and from all parts of the United Kingdom samples are sent to receive an unprejudiced and authoritative pronouncement.

It will be obvious that the maximum benefit from a fully-equipped conditioning house can only be attained where industries are grouped about particular centres as they generally are in Europe. But it will need no persuasion to convince American manufacturers and dealers in textiles that a conditioning house on the pattern of that at Badford is an excellent helpmeet in all vicissitudes.

FINISHING FANCY CASSIMERES.

BY I. A. T.

When the pieces come from the loom they should be numbered on the tail end with style, pattern, and weight per yard, for future reference. They are then ready for burling, which consists of raising and removing all knots, slugs, bunches, etc. Imperfect places that need sewing should be marked with chalk. This sewing is very important and should be done by girls who are experienced in the work. As cassimeres are close finished fabrics, they should be mended in the grease. All parts are treated alike during the finishing process and this will make the imperfections less likely to show than if the sewing is done after the goods are sheared.

In the next process, fulling, the pieces are folded with the face inside and the selvages sewn together. This makes the pieces full more evenly and also keeps the flocks from the face of the goods, if flocks are used. The flocks should be applied as slowly as possible and the pieces run from fifteen to twenty minutes. The goods are now ready for soaping and for this a soap containing three to seven ounces of alkali per gallon is best. It should be used lukewarm and care taken to have the pieces wet evenly and thoroughly. Good judgment is necessary to shrink the goods in length and width in the same proportions. If this is not done they will be more likely to draw out or stretch in succeeding operations. It is a good plan in some cases to take the goods out of the fulling mill and reverse the ends during the operation. They should lose anywhere from eighteen to twenty-two per cent. in weight.

After fulling the goods are scoured, but this should be more of a rinsing process than scouring, as the soap used in fulling should have alkali enough to raise the grease thor-

oughly. After several applications of warm water in the washer, pour on a 2 1/2 per cent. solution of sal soda to remove any soap remaining and then run in cold water for half an hour. If the pieces are to be soured fill the washer half full of water. For fancy colors add a small quantity of sulphuric acid, run for ten minutes and rinse well in cold water. If the goods are to be burr dyed they should not be soured. The pieces are now extracted lightly and gigged.

The goods must be gigged very carefully in order to bring the threads out round and full. The next process is back burling, after which the goods are taken to the shear. This operation of shearing should not be hurried and several runs should be made with the blades at different points until the threads show full and round. On the specking table burrs and coarse fancy threads are carefully removed, and any places to be mended should be marked. After two or three runs on the brush the pieces are pressed. If a screw press is used the pieces should be folded with the face inside and paper placed between the folds. The papers should be changed at the end of six hours and the face of the goods lightly steamed.

With a rotary press give a moderately hard pressure so that the back of the piece will hold the pressing when the face is steamed. Run on the roll, let stand for twenty-four hours, then steam lightly again. After a final inspection the goods are ready to be cased and shipped.

A COTTON SPINNING MILL.

The yarn mill shown in the accompanying illustrations was built at Mastig, Bohemia, from plans prepared by a Swiss engineer and is to be operated in connection with a weaving mill at that place. The plan is distinguished by convenience in arrangement of the machinery and economy in the use of room, while at the same time there are spacious alleys in each department and plenty of space for storing the stock between processes.

There are three stories and a basement. The mill is lighted throughout from the sides and covered with a fireproof cement roof. The beltway and stairway divide the mill into two unequal parts, one being about twice the size of the other. A smaller space at the left accommodate the preparing and reeling processes.

On the ground floor, Fig. 3, the wardrobe for the operatives is located at E, the closets at F. The watchman's room is at C. The main room, D, is used for openers and pickers. Above this room on the second floor, Fig. 5, is the mixing room, L, also the overseers' room, wardrobe and closets. The third floor in this part of the mill is used for reeling the yarn. Next to the wardrobe on this floor is a stairway leading to the water tower where water is stored to supply the sprinkler system. Between the two main sections of the mill are the beltway and elevator well, K, the tool room, I, a dust tower above the roof and a stairway to each floor. The basement under the right hand or largest section of the mill is used for storing the yarn.

The first floor, D, accommodates the drawing and intermediate frames. The spinning machinery is located on the second and third floors. The foundation wall is 3 feet thick; above this the side walls are 2 1/2 feet thick at the basement and first floor, and 2 feet thick at the second and third floors. The width of the piers and windows is in the proportion of 1 1/2 to 2, affording a strong construction and a good supply of light. The windows have wrought iron frames with swinging sash and are 8 feet, 13 feet, 11 1/2 feet and 10 1/2 feet above the basement, first, second and third floors respectively. Beginning with the basement the ceilings are 11 1/2 feet, 17 feet, 14 1/2 feet and 14 1/2 feet high. The No. 10 wrought iron columns in each story support No. 30 beams between which are built arches of masonry. On this masonry above the top story is placed the cemented roof. The roof pitches toward the centre about 4 per cent. Crosswise of the mill the pillars are placed at intervals of 16 feet, 14 feet, 16 1/2 feet, 16 1/2 feet, 14 feet, 13 feet and 16 1/2 feet; lengthwise the end spaces are each 13 feet; the intermediate spaces are each 11 1/2 feet. This arrangement accommodates the spinning machinery and allows for commodious passage ways.

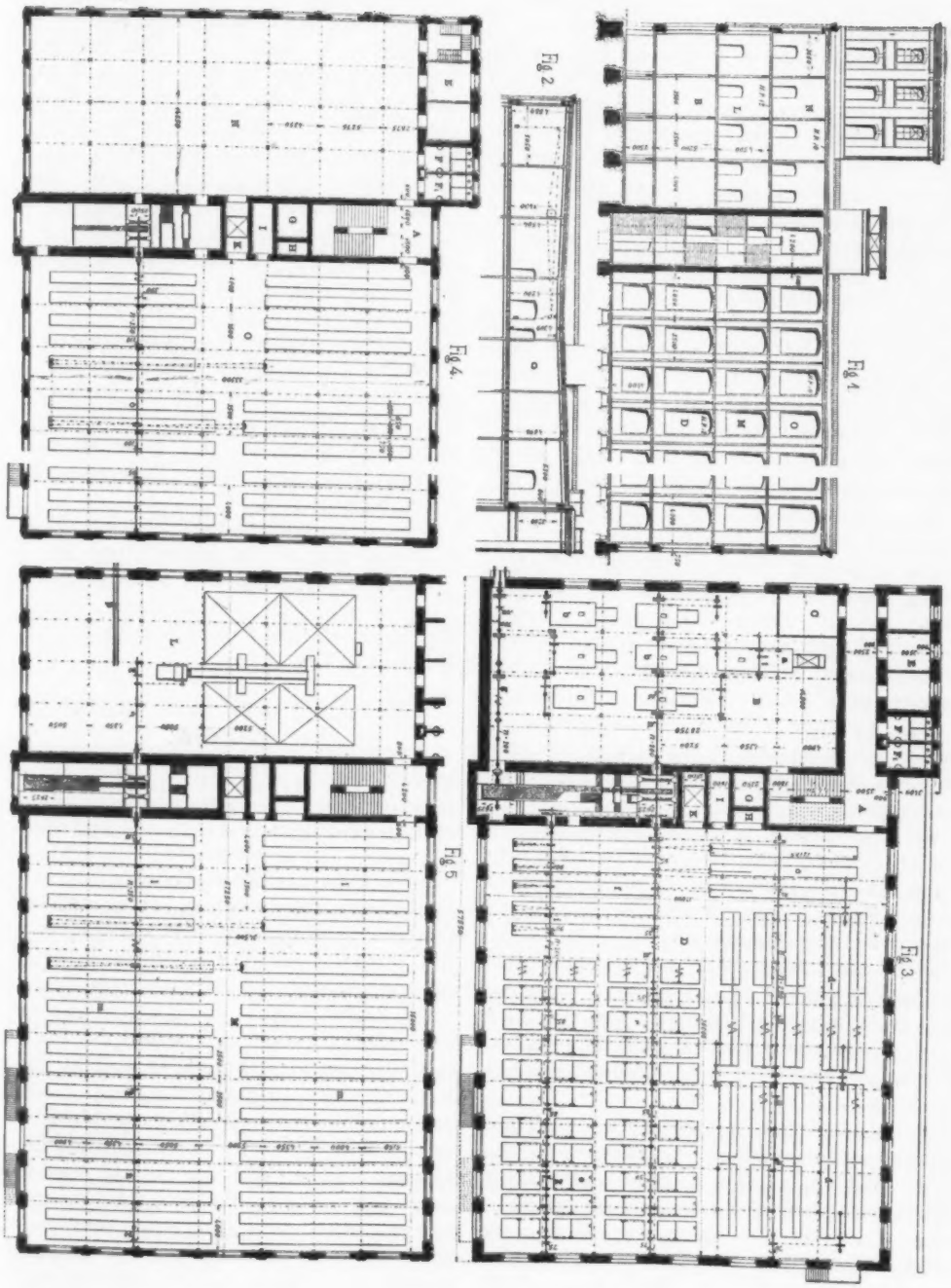


Fig 2
Fig 4
Fig 1
Fig 5
Fig 3

The object of the plan is at once apparent when the location of the machinery is considered in connection with the progress of the stock through the different processes.

The elevator carries the cotton bales to the second floor where they are loaded on a truck running on a track, p, by which they are carried to the bale breaker in the room, L. The stock is then carried by a trunk to the mixing room, which is open and accessible from all sides, allowing access to the air in all directions. The mixing room is directly over the picking room so that the cotton drops direct to the vertical opener and lapper, a. The laps are then taken to the six lappers, b. The cards, e, are divided into two groups with 24 and 20 machines respectively. For fine yarn the stock is carded twice; for coarser counts but once. The material next goes to the drawing frames which are arranged in two groups in front of the cards. Each group contains six machines of ten heads each, 18 1/2-inch gauge. There are two drawing frames of 176 spindles each, 10 1/2-inch gauge, making in all 352 spindles. Two groups, e and f, of respectively three and five intermediate frames of 132 spindles each, 6 3/4-inch gauge, make 1,056 spindles in all. The slubbing is now taken to the roving frames either on the second or third floor according to the size of the yarn required, and is drawn into roving suitable for spinning.

On the second floor, N, there are ten finisher frames, l, in two groups, each machine having 172 spindles of 5 1/4-inch gauge, making 1,720 spindles in all. These supply 28 ring frames on the same floor. Two of the frames have 456 spindles each, 2 1/4-inch gauge; 26 frames have 400 spindles each, 2 1/2-inch gauge. On the third floor, O, are ten finisher and 26 ring frames. The total number of ring spinning spindles is 21,712.

The power plant is located in a separate building and the power is transmitted by the main shaft, g, to the beltway. This shaft makes 200 turns per minute and carries a pulley 8 1/2 feet in diameter, with 18 grooves for the rope drive. Eighteen of these ropes transmit 730 H. P. The shaft from which the opener, lappers, cards, drawing and roving frames are driven transmits 200 H. P. Fig. 3 shows the manner in which the power is distributed. The line h transmits power for driving lappers and cards with the other machinery in room D. The intermediate frames are driven by quarter-turn belts running on guide rolls. The main shaft on the second floor is driven 350 turns per minute by six ropes and has a capacity of 250 H. P. The cards require 45 H. P. The finishing frames and ring frames are driven from direct or quarter turn belts running over guide rolls. The main shaft in the third story is driven 350 turns per minute by seven belts and has a capacity of 280 H. P. Each line of shafting is equipped with couplings so that it can be disconnected if desired. The bearings in the beltway are all accessible by means of suitable stairways. The ease with which all parts of the building can be reached from the outside increases the security against fire.

Fig. 1 is a plan of the elevation; Fig. 2, a sectional plan of the upper story and roof; Fig. 3, the first floor; Fig. 4, third floor; Fig. 5, the second floor.—(Translated by the Textile World Record from Uhland's Technische Rundschau.)

THE PREPARATION OF ABSORBENT COTTON.

BY JULES GARCON.

(Bulletin de la Societe d'encouragement pour l'industrie nationale.)

Very little has been published on the subject of absorbent cotton. It is well known that this process consists in treating the cotton with hot alkaline solutions in order to rid the fibre of the fatty material and thus make it absorbent. About 1837 cotton wadding was proposed as a substitute for linen cloth for surgical bandages and in 1864 a French army surgeon, Auguste Touraine, connected with an expedition in Mexico, announced for the first time a formula for absorbent cotton, and the actual production dates very close to the antiseptic theories of Lister. About 1879 absorbent cotton became an article of commerce. Its consumption increased very rapidly and in 1887 the process was improved so as to produce very white

and absorbent material. Prepared with care it absorbs about twenty times its weight of water.

The choice of the cotton has a very important influence on the quality of the finished product. Other factors besides the set of the goods must be considered. Sea Island and Egyptian grades with their very fine and long fibres are not suited for the preparation of absorbent cotton because it is very difficult to make them absorbent. Brazilian cotton is too wooly and it is very difficult to bleach the colored grades. Indian cotton is very little used because of the short, tender and dirty fibre. The best grades are those known as New Orleans, Texas, Allen Seed, Mobile and Benders of middling grades. The cotton should be as clean and white as possible. Unripe fibres and those to which the seed is attached must be removed carefully because they do not possess the cellular canal and consequently cannot be made absorbent. They become brittle when treated chemically. Cotton card waste is used with success for absorbent cotton, but it does not give a product of the first quality. Cotton can be bleached without being made absorbent and, inversely, it can be made absorbent without being bleached.

On the continent of Europe absorbent cotton is obtained by removing all traces of fatty material by using a dissolvent like petroleum ether, bisulphide of carbon, or a simple treatment in alkaline solution without going so far as to bleach the fibre.

The principal operations for preparing absorbent cotton are:

1. Mechanical operations. Sampling, assorting, cleaning, picking, carding. As it comes from the card it is run in the form of a web providing absorbent wadding is required; for absorbent gauze it is run from the card in the form of a ribbon.

2. Chemical operations. The cotton, cleaned as well as possible by previous processes, is placed in a boiling kier where it is washed and then treated with an alkaline solution to saponify all that is not cellulose, such as wax, fatty matters and pectose. The solution is then drawn off and the cotton is bleached to remove all coloring matter and bi-products of the alkaline treatment. It is then dried, immersed in acid and then dried again. It is next submitted to a second treatment with alkaline solution, after which it is again dried. It is then treated with acid, neutralized and dried. In all, twelve processes.

3. Mechanical operations. Cleaning, drying at 105 degrees, carding, winding on spools and sterilizing.

Absorbent gauze is treated as follows:

1. The cotton is combed, drawn, spun, woven.

2. Chemical operations. They are the same as for the wadding.

3. Mechanical operations require a tentering machine and a mechanical folder.

The twelve phases of the chemical operations with the final sterilizing are of the most interest. The chemical treatment is very harsh and there is no bleacher who treats cotton with so much severity. Absorbent cotton is really but over-bleached cotton. In the course of the twelve operations it is necessary to take some precautions. The cotton should not be packed in kiers so tightly as to prevent the free circulation of the liquid. The danger of overcowding is especially great with short cotton which does not possess much elasticity.

The essential operation is the treatment with an alkaline solution. This consists in boiling the cotton with a one per cent. solution of caustic soda. The boiling is carried on at low pressure for from twelve to forty-eight hours. There is no advantage in treating it in a vacuum. The treatment with the alkaline solution destroys the cellulose. Kilmer found the loss to be from 4.41 to 5.71 per cent., after boiling one-half hour, and a loss of 5.08 and 7.33 per cent. after boiling for one hour in a 2 1/2 per cent. solution.

The alkaline process is followed by bleaching the cotton in a solution of hypochlorite containing one per cent. of chlorine. Hypochlorite of soda is more expensive than chloride of lime, but it gives a softer, whiter and more elastic cotton. Attempts have been made to use the Thompson process, but it was found to be too expensive and it is very difficult to work large masses of cotton. The price of peroxide of sodium is likewise too high to permit its use.

Bleaching of absorbent cotton is carried as far as the fibre will stand. It is necessary that everything that is not cellulose be removed

and the cellulose itself is attacked and oxydized. This is the reason why absorbent cotton has an increased affinity for basic dyes. This affinity can often be used as test of the absorbing power of the cotton. In fact, the absorbent fibre possesses the reactions of an oxy-cellulose.

The cotton is next washed and immersed in a two per cent. solution of sulphuric acid and a one per cent. solution of hydrochloric acid and the alkaline treatment is then repeated. These alkaline solutions are generally about 1/4 per cent., and boiling should not be prolonged. The cotton is rinsed and then treated with acid to eliminate all that can be dissolved, such as mineral salts, iron rust, etc.

The removal of all traces of the acids is one of the most important features of the process and is very difficult. It is nevertheless indispensable in order to avoid a tendering of the fibre during drying. The cotton is rinsed thoroughly in water to which is added either an antichlorine or soap. The antichlorine gives a cry to the cotton. Soap is preferable but all traces of it must be removed, otherwise the cotton will become yellow. Some manufacturers leave soap in the finished product or add chloride of lime in order to increase the softness of the material and the hygroscopicity of the fibre, but such methods are always at the expense of the color. The operation is finished by a thorough rinsing and the character of the water is by no means an unimportant factor. Each fibre of absorbent cotton is porous cellulose, in other words, a filter. As there are more than 150,000,000 fibres in a pound, a batch of 1,000 pounds would form a filter of great capacity. If the water is impure the cotton will be injured.

The last operation consists of sterilizing, and is very important. Most hospitals sterilize their own cotton, but large quantities of sterilized cotton are found on the market. For sterilizing wadding formaldehyde is used; for gauze, steam. The sterilizing is done under a 20-inch vacuum in a steel tank capable of holding 2,000 pounds of cotton. The process is carried on for two hours with formaldehyde or one hour with steam.

The medical profession employ a non-absorbent dressing which takes up the liquids by capillary attraction between the fibres, absorbent dressings, antiseptic dressings, or those that are sterilized. The antiseptics are few in number: phenol, salol, corrosive sublimate, iodoform, boracic acid, double cyanide of mercury and zinc are most frequently used.

Antiseptic gauze can be prepared dry by preparing the antiseptic in a volatile solvent, soaking the gauze in the solution and then evaporating the excess. The wet process consists in soaking the material in a non-volatile solution, or in an emulsion, for example, of glycerine.

Antiseptic cotton is at present but little employed for the profession prefer to use the sterilized absorbent cotton. Absorbent cotton is also used outside the medical profession in purifying by filtration a large number of aqueous solutions such as oils, syrups, milk, fatty materials, etc. Large quantities of absorbent cotton are used in the electrical industry and in the manufacture of incandescent mantles, varnish, and various compositions of cellulose. For most of these uses a cotton giving the least quantity of ash after burning is to be preferred. The proportion of ash is very variable. According to the United States Department of Agriculfure the average ash of six samples of American cotton was 1.37 per cent.; maximum, 1.80 per cent.; minimum, 1.93 per cent. The proportion of ash from absorbent cotton depends more or less upon the severity of the treatment to which it has been subjected. The pharmacists of the United Sates, Great Britain and Germany state that absorbent cotton should not yield more than .8 per cent. of ash.

The United States imported silk manufactures in 1904 to the value of $31,030,522, and exported them to the amount of $515,088.

The first Irish flax spinning mills were started in 1828, one in Belfast by Mulholland, the other in Castlewelland by Murland.

Russia is the principal flax producing country in the world and exports about 230,000 tons of flax and tow every year.

COTTON MANUFACTURING IN MASSACHUSETTS AND THE SOUTHERN STATES.

[The following is an abstract of a recent report by the Massachusetts Bureau of Statistics and Labor. In Monthly Comment of this issue we have referred at length to the report which deals with a subject of general interest,—the conditions in American cotton mills. It is an undoubted fact that the surplus of cheap labor in the South, which has been the principal cause for the phenomenal development of cotton manufacturing in that section during the last twenty-five years, is now practically exhausted. As a result of that exhaustion the South is seeking new sources of labor supply and the inequalities that have existed between the North and South in respect to wages, hours of labor and educational facilities are being removed by the natural operation of supply and demand. Although it is unquestionable that in some cases these inequalities have resulted in lowering the conditions in Northern mills, it is a source of profound gratification that in future the conditions will be equalized by the elevation of Southern labor to the higher level. The prosperity of the United States depends upon the maintenance of the American level of wages.—Ed.]

Our agents began their work in Charlotte, N. C., and completed it in Atlanta, Ga. Realizing the feeling existing in the South against what was termed the "impertinent inquisitiveness" of the North, the method adopted in all the interviews, except in Atlanta, was to approach the mill men on the ground of scarcity of help, with the understanding that if the South was in need of experienced operatives from the North our agents were there in their interest to ascertain whatever might prove to their advantage in the matter of wages, hours of labor, and cost of living. The results of the investigations are given in this report.

The extremely low wages paid in the Southern mills is one of the factors which induce whole families, men, women and children to enter the mills, although this is not exclusively the case in the South. For instance, the attention of our agents was called to a family of five persons working in one mill whose ages ranged from 13 to 20 years. They were divided among the various departments and drawing wages as shown below:

1 Slubber hand, per month	$19.20
2 Spinners, per month	25.20
2 Weavers, per month	42.00
Total	$86.40

It was stated that many families of this size are now doing this, a few larger ones, all good workers, making $100 a month and upwards. These figures were taken from the pay rolls and show the actual wages paid.

The houses occupied by the operatives, when built in the country away from the dust and turmoil of city life, are attractive, though modest in appearance, with plenty of light and ventilation. Usually each house is on a separate lot with a yard in front for cultivating flowers and a garden in the rear where all the vegetables needed for living purposes may be raised. The mill builds and rents these houses at varying rates a month for each room. Thus, a four-room cottage at 50 cents a room would rent for about $2 a month.

Houses do not have to be built so tight as in the North, it is claimed, nor do they need plastering, consequently they can be built for less original outlay and rent more cheaply. In some localities this is true, but the winters are almost as cold as in the North, though not so continuous, and the thermometer often registers as low as zero. The average winter temperature for Charlotte is 39.2 degrees; Atlanta, 42; Columbia, 43.8; and Augusta, 45.2.

Fuel is ordinarily supplied to the operatives by the small corporations at cost, and is cheap. For instance, in some parts of the South, the operative can get all the wood he requires merely for the trouble of cutting and hauling from the adjoining forests belonging to the mill, or, in the absence of this source of supply, he can purchase the same from the corporation for $2 to $3 a cord for pine, and $4 to $4.50 for hard wood. It is true that the operatives in the majority of the country mills cut and haul their own supplies from the wood lots belonging to the mill, but it is equally true that this supply is not inexhaustible, and there will come a day when they must purchase. The coal used is soft coal of the Tennessee or Alabama variety and is sold by the corporations to their help at cost, that is for about $3 a ton, hard coal for $6 a ton. But little coal is used, except in the mill tenements in the city districts, and in very cold weather. Kerosene oil, colored red, is sold to those who think they can afford the extravagance of having brilliantly lighted homes, but, in the majority of cases, the only light is supplied by the fire in the open fireplace where all the cooking is done. In summer, the cooking is often done out of doors in primitive fashion. The necessity of artificial light in the home seems to be small, owing to the fact that almost all of the mills run nights as well as days.

The Picayune of New Orleans on January 19, 1905, said, "It is somewhat peculiar that the competition of the Southern States is charged to lower wages and to child labor, and not a word is said of the saving in freight and charges in manufacturing in the neighborhood of the cotton fields. The Southern mills have suffered heavily from the high prices of cotton during the past year, but the fact remains that conditions are steadily coming into existence which will make it impossible for New England to spin and weave cotton in competition with the cotton States. Another generation of men may come upon the stage of action before the change shall be fully consummated, but the inexorable laws of industrial and commercial

economies will finally compel it."

As bearing upon this line of argument, so far as it affects the Massachusetts cotton mills at present, we show in the following table the cost of production in 1890 and 1900 by percentages, based upon the United States Census returns, for each of the four States under consideration:

Classification	Mass'ch'ts		Georgia		No. Carolina		So. Carolina	
	Percentages.							
	1890	1900	1890	1900	1890	1900	1890	1900
Cost of production....	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Cost of raw cotton used	45.67	40.68	61.00	60.01	64.95	56.47	69.41	61.25
Other materials used ...	17.56	15.85	10.70	8.80	10.14	15.58	6.41	9.58
Salaries.....	1.24	2.10	1.82	2.66	2.05	2.43	1.51	2.20
Wages	28.07	33.80	19.84	22.08	17.76	21.25	16.80	20.79
Miscellan'us expenses...	7.46	7.57	6.64	6.45	5.10	4.27	5.87	6.18

In 1890, out of every $100 expended for production, the mills of Massachusetts spent $45.67 for raw cotton and $40.68 in 1900, a decrease in the last named year of $4.99. Georgia, out of each $100, paid $61 for raw cotton in 1890 and $60.01 in 1900, a decrease of 99 cents. North Carolina, out of each $100, paid $64.95 for raw cotton in 1890, and $56.47 in 1900, a decrease of $8.48. South Carolina, out of each $100, paid $69.41 for raw cotton in 1890 and $61.25 in 1900, a decrease of $8.16. At these two Census periods, Massachusetts paid less for her raw cotton than any one of the three Southern States considered. How long this condition of affairs will continue is problematical, and while the secretary of one Southern Chamber of Commerce stated that the nearness of the mills to the cotton fields accounted for many of the advantages enjoyed by the mills in competing with the North, we have, on the other hand, the statement of a mill superintendent who declared that it was no advantage for the reason that the South was short of money and could not compete with the North in large purchases. Fall River could purchase $20,000 worth of raw cotton at Galveston, ship it North by sea, and not worry if it did not reach there for two months, whereas when a Southern mill wanted cotton it wanted it quickly, and could not afford to wait. But when the mills are in an easy position in regard to money, then it certainly will be an advantage to be near the source of supply.

We have no means of comparing the year 1900 with 1890 as regards the amount paid for freight, but taking the figures for the Census year 1900, considering the total amount paid for materials consumed in manufacturing in the cotton mills as 100 per cent., Massachusetts expended, out of every $100, $1.20 for freight; Georgia, $2.18; North Carolina, $1.59; and South Carolina, $1.17, the latter State being the only one of the three considered which pays less for freight than does Massachusetts. Considering the value of land, buildings, machinery, tools, and implements as a unit, and the total amount paid for taxes, and applying this to each $1,000 of the value of the plant, it is seen that the highest rate of taxes was paid in Massachusetts, the next highest being Georgia, followed by South Carolina and North Carolina in the order named. In Georgia occurs the only reduction in the rate of taxes per $1,000 valuation, although the increases in the other States are small. Naturally, the South has many advantages in regard to taxation that are not enjoyed by a thickly settled State like Massachusetts, and it would be expected that the improvements which are enjoyed in every textile manufacturing city in this Commonwealth would require a larger amount for taxes than in the South, where improvements, if made at all, are made at the expense of the mills themselves. This item, of course, it is difficult to even estimate in the absence of any reliable basis.

Before the era of mills and factories, Charlotte depended largely for sustenance upon the local cotton market, and it is yet an important factor in her prosperity; but the establishment of a bonded warehouse system gave her a great advantage over other towns as a cotton market. These warehouses give the farmer the privilege of securing cash advances on his cotton, at the same time enabling him to hold it for a rise in the market. The advantages may be illustrated by the case of a farmer who brings a bale of cotton to the market and finds the current prices disappointingly low. He does not want to sell, but being in need of ready money, concludes to store his bale, get a cash advance on it, and hold it until the market goes up. He takes his cotton to one of the warehousemen, by whom it is received, classed, and graded, the bale weighed, marked, and stored. The farmer is then given a warehouse receipt, which shows the grade and market value of his cotton on the day it was stored. Attached is the inspector's receipt showing the classification, weight of the bale, and its mark, and also the certificate of insurance. The receipt covers another important point: The market price of cotton on the day it was stored might be eight cents, and while the cotton is in the warehouse the price may have advanced to nine cents. In such a case, the receipt is designed to give the owner the advantage of the rise, and he gets the benefit of any increase in value that may occur. The warehouse charges 15 cents a month per bale for the storage of cotton, and the receipt is good at the banks for its face value, less the interest charge.

The Southern manufacturers can carry their raw cotton at a cost of less than six per cent., sometimes as low as five per cent. There is a storage company which, when a manufacturer has laid in a stock of cotton, sends to the mill, inspects the cotton, and swears in an agent to be responsible that none of the cotton shall be removed from the store until paid for. The storage company issues a guarantee certificate setting forth the quantity, quality, marks, etc., of the cotton, undertaking "to hold the said property in store and to deliver the same, upon the return of this receipt, properly endorsed, and upon payment of all charges thereon." The storage receipts of this company are in turn registered with a New York surety company, which guarantees that the storage company "shall honestly and faithfully keep and perform all of its obligations under the terms of this receipt as to the quantity, quality, care, and delivery of the property."

SOUTHERN MILL CONDITIONS.

Below will be found a detailed report as to the conditions found existing in the mills in Charlotte, North Carolina; Columbia, South Carolina; and Augusta and Atlanta, Georgia.

Charlotte, N. C.

The authorized hours of labor in Charlotte are 66. The first mill visited ran from 6 A. M. to 12 M., and from 12.40 to 6.40 P. M., 12 hours a day, and six hours on Saturday, stopping at 12 o'clock, which allowed a Saturday half-holiday. This system, while satisfactory to the officials, was opposed by the operatives.

Picker room: Nine machines, three men; boss picker at $1 a day and two men at 90 cents a day.

Carding room: 50 revolving flat cards; one grinder at $1.35 a day, two strippers at 75 cents a day. Strip three times a day, two men to put in laps and break off cams at 75 cents a day.

Drawing tenders: Run four drawings, six deliveries each, 75 cents a day.

Slubbing: 80 spindles, run two; .62 hank roving, price per hank, four cents; make about $7 a week; men employed.

Intermediate-first: 104 spindles, run two; 1.68 hank roving, price per hank, 4 1/8 cents; make about $7 a week.

Intermediate-second: 104 spindles, run two; 3.68 hank roving, price per hank, five cents; make about $7 a week.

Roving: 144 spindles, run two; 6 hank roving, price per hank, 5 1/8 cents; make about $6 a week.

Jacks: 194 spindles, run two; 10 hank roving; 85 cents a day, weekly pay, $5.10. It will be noticed that these operatives are paid by the day, while the rest of the spindle tenders are paid by the piece.

Ring spinning: 128 spindles on a side, run from four to eight sides at 10 cents and 11 cents a side (chiefly young girls); doffers (chiefly boys), 35 cents to 40 cents a day, according to ability or proficiency; head doffer, 50 cents a day.

Spoolers: 14 cents a basket, about 85 cents a day; earn from $5.10 to $5.50 a week.

Drawing-in girls: 43 1/2 cents for drawing in 5,148 threads; earn about $6 a week.

Slasher tenders: Two slashers and six warpers; two men employed; head man, $1.60 a day; other man, 80 cents a day.

Weaving: 120 by 84—43 inch goods, 43 1/2 cents a cut; run from five to eight looms; 64 by 60—28 inch goods, eight cents a cut, run 16 Northrop looms; all goods 60 yards to the cut; make about $7.50 a week.

Loom fixers: From 60 to 80 looms to the section; $1.50 a day.

The claim was made that children under 12 years of age are not allowed to work in this mill. Our agents did not go into the mill, but, on invitation of the treasurer, stood at the gates for a few minutes previous to starting up. Many of the operatives had by this time passed into the mill. They saw, however, quite a number, but no young people that appeared to be below the age limit allowed by law. It will be remembered, however, that this State is one of the best in the South on the child-labor question.

The officials stated that in about three years' time wages have advanced 20 per cent., with no reductions, and cited the case of another mill which had advanced wages about 50 per cent. during the last five years. This has been voluntary, ostensibly, on the part of the officials, but the real cause was the scarcity of operatives and the refusal of the present employes to work under existing conditions. The contemplated effect of this move, that of getting help for the mills by raising wages, has not been realized, as there is still a great scarcity. One mill, which was built here recently, having tried for months to secure help, has not been successful up to the present time. It is the opinion of the officials that, owing to this shortage of help, which is growing more serious each year throughout the Southern States, and which is becoming a grave problem, the mills will be compelled, eventually, to adopt shorter hours, and within a short time, the case in Union, S. C., being considered the first step in that direction.

The educational question is much in evidence in this district. While there is a law prohibiting the employment of children under 12 years of age, there is no law that compels the children to attend school. The superintendent of a mill in this district believes that this is a serious drawback to the textile industry, as it does not give the young people who enter the mills sufficient knowledge to become intelligent operatives. There are no children employed in this corporation under the age allowed by law, according to the statement of the superintendent.

The following is the list of work and wages as obtained in these mills:

Picker room: Five machines, three men; one at $5.40 a week, one at $4.80 a week, and one at $4.20 a week.

Carding room: 28 revolving flat cards; one grinder at $7.50 a week, two strippers at $4.80 a week.

Drawing tenders: 72 deliveries; 2 tenders at $3 each a week.

Slubbing: 52 spindles, run two; .50 hank roving, price per hank, four cents; make $6 a week.

Intermediate-first: 66 spindles, run two; 1 hank roving, price per hank, 4 1/2 cents; make $6 a week.

Intermediate-second: 108 spindles, run two; 2.75 hank roving, price per hank, five cents; make $6 a week.

Jacks: 160 spindles, run two; 8 hank roving, price per hank, six cents; 10 1/2 hanks, 6 1/2 cents; make $6 a week.

Ring spinning: 128 spindles on a side; warp 40s, 10 cents a side; filling 50s, 11 cents a side; doffers, 50 cents a day; section hands, 25 frames to section; $6 a week.

Spoolers: Spooling 9 sides of 128 spindles, 40s yarn; $4 a week.

Warpers: Run four machines, $9 a week.

Slasher tenders: Run one machine; earn from $7.50 to $9 a week.

Drawing-in hands: $7.50 a week.

Weaving: 72 by 68—40 inch goods, Northrop looms, run from 10 to 16 looms; average 54 cents a loom; 60 yards to cut; two oilers at $6 each a week.

Loom fixers: 80 looms to the section, $9 a week.

Cloth room: $3 a week.

Folders: $6 a week.

These mills work 12 hours for five days and six hours Saturday, closing at 12 M., making 66 hours for the week.

Columbia, S. C.

In Columbia, the three mills visited were congregated at one end of the city. One of the mills

is large and new, and the other two are smaller and older.

The same conditions with regard to scarcity of help exist here as in Charlotte, in fact, they seemed to be worse. There were between 400 and 600 looms stopped for want of help in one mill alone. It is difficult to get a sufficient force to operate the mills, and just as difficult to retain what they have. There is no such thing as driving the operatives, and to hold them, they must be used with consideration. They will not, according to the officials, work more than eight days during a "pay," which is two weeks, without either going out or staying out. That same cry of no energy, no ambition, and lack of skill, as compared with the Northern operative, is heard. The management is exceedingly anxious, and would give much if they could induce, by any means, the operatives of the North to emigrate South; in fact, their agents are at work in Massachusetts trying to obtain help, and overtures have already been made to many families.

There is no compulsory educational law. The officials state that the age at which children may enter the mills is 12 years. There is an exception to this law, however, namely, parents may secure a permit from a trial justice to allow their children to go into the mill at the age of 11 years. From appearances, these permits must be issued by the wholesale and to children much below 11 years of age. Our agents secured permission to go through the mills, and the spectacle of child-labor with all its evils presented itself. There were not one or two, but scores of girls and boys, and a number of them did not appear to be more than eight years of age. There are colored operatives in these mills. They feed the openers in the picker room, sort bobbins in the ring-spinning room, and clean looms in the weaving room. In discussing the question of shorter hours with a superintendent he reluctantly admitted that the ten-hour day was coming fast, not forgetting to say that the blame for this could be attached to the Northern capitalist and manufacturer, and having no hesitation in saying that it was Northern money that had influenced the large corporations in Union, S. C., to post a ten-hour day notice.

The wages paid are as follows:

Picker room: 24 machines, seven men; six at $4.50 a week and one at $5.10 a week; boss picker, $9 a week.

Carding room: 150 revolving flat cards; three grinders at $9 each a week, six strippers at $5.25 a week, and four alley boys at $4.50 a week.

Drawing tenders: 30 deliveries, $3.75 a week.

Slubbing: 72 spindles, run two; .75 hank roving, price per hank, 4 1/2 cents; make $7.20 a week.

Intermediate: 102 spindles, run three; 2 hank roving, price per hank, five cents; make $9 a week.

Roving: 128 spindles, run four; 5.50 hank roving, price per hank, 5 1/2 cents; make $7.50 a week; 152 spindles, run four; 6 hank roving, price per hank, 6 cents; make $9 a week; 176 spindles, run three; 6.90 hank roving, price per hank, 6 1/2 cents; make $10.50 a week.

Ring spinning: 224 spindles on a side, run from six to 10 sides at 12 1/2 cents a side; doffers, 50 to 60 cents a day; section hands, 40 frames to section, $6 a week; oilers, 40 frames to section, $6 a week.

Warpers: Run from four to six machines, $9 a week.

Spoolers: 90 cents a box; earn from $4.30 to $6.48 a week.

Drawing-in hands: One cent a hundred; earn $9 a week.

Slasher tenders: Run six machines, 6 men at $6 each a week; boss slasher, $9 a week.

Loom fixers: 100 looms to section, $9 a week.

Weaving: 64 by 64—38 1/2 inch goods, Northrop looms, run from 12 to 24 looms; 60 yards to cut, 11 1/2 cents a cut; earn from $6 to $10.50 a week.

Cloth room: 80 cuts a day, $4.80 a week.

Folders: $5.10 a week.

The hours of labor are 12 hours for five days and six hours Saturday, closing at 12 M., making 66 hours a week. Board can be had from $2 to $2.50 a week. Wood, when supplied by the company, is at the rate of $2 a cord, and coal, $4 a ton; deducted from the pay of the operatives in installments.

In one establishment, our agents were asked if they knew of a competent mill engineer in the North who would come to the South and accept the position of chief engineer of a mill about to be started. The pay was stated as $1.75 a day, and the number of hours a day was 12. They certainly do not pay as high wages for skilled or unskilled help as in the North nor work as short hours, but they insist that there are compensations in the way of cheaper rents, food, fuel, and clothing, and believe that these compensations, together with continuous employment (which was dwelt on at great length in all conversations), more than offset the lower wage.

Augusta, Ga.

It was in Augusta that the first refusal to supply the information was encountered from the mill people. The superintendent and president of one of the largest mills did not seem to be overanxious to furnish the figures desired. They were, apparently, suspicious of visitors from the North, and did not hesitate to make known their suspicions in plain terms. The president said that at the present moment he could find employment for not less than 200 people. He also said that scarcity was not the only difficulty which presented itself on the help questions. What operatives they had would not work more than three or four days a week. The average, not counting the overseers, section hands, carpenters, machinists, etc., who work steadily, while the others rest, did not reach four days a week. This condition of affairs, he said, applies to all the mills in this vicinity, and it is much worse in Columbus, Ga. In fact, the situation is so bad that he had intended to go West for the purpose of securing help for his own mill. He stated that while he would like very much to get help from the East and North, would much prefer them to any other, it had not entered his mind to make an effort in that direction owing to the strong inclination of the Northerner for trade unions. They are not wanted down South.

The operatives were seen but were reluctant to talk, exhibiting a fear that it might reach the officials of the mills and the result would be a discharge, and a discharge for such an offense means to be blacklisted in all of the mills around. On the

question of child-labor, however, the operatives freely stated that this evil was not as great in Augusta now as it had been a few years back. Not many children can now be found in the mills under 10 years, and but few at this age. They are quite numerous, however, at 11 and 12 years of age. The falling off of this evil is attributed to the agitation that has been going on all over the country against the system. The operatives expressed much dissatisfaction with the long hours of labor and appreciate the efforts that are being made to bring about a shorter working day in this State.

The cost of living here is about equal to that of the mill towns in New England. All the corporations own tenement property, but not on so large a scale as in the other places recently visited. Many of the operatives live in houses owned by private individuals, which rent for $10 a month for eight rooms. The rents for mill houses are less.

The wages paid in this vicinity are as follows:

Picker room: $4.80 a week; boss picker, $6.

Carding room: 48 revolving flat cards, $9 a week; card strippers, $5.40 a week.

Drawing tenders: $4.20 a week.

Slubbing: 60 spindles, run two; $8.40 a week.

Intermediate: 60 spindles, run two; $7.02 a week.

Roving: 120 spindles, $6.48 a week.

Ring spinning: 120 spindles on a side, run from four to eight sides at 12 cents a side; earn from $2.88 to $5.76 a week.

Spoolers: 5 1/2 cents a box of 56 pounds, $6 a week.

Warpers: Run from two to four machines each aided by a child creeler; warper is paid 23 cents a beam of from 460 to 520 pounds; two machines, $5 a week, four machines, $7.50 a week; helper, $3.60 a week.

Slasher tenders: Run one to four machines, one helper; 520 cuts, 65 yards each.

Weaving: 32 to 43 inch sheetings, shirtings, and 3 shaft drills, run from four to eight ordinary looms, 51/2 inch bobbins; 30 inch sheeting 13s warp and weft, 48 picks to the inch, 15 1/2 cents a cut of 65 yards, 5 cuts per loom a week; sheetings, 36 to 40 inch, 23 cents a cut; drills 30 inches wide, 16 cents a cut of 62 1/2 yards, 6 cuts per loom a week; 64 by 64—38 1/2 inch, 11 cents a cut, run from 12 to 20 looms, 62 yards to the cut; earn as much as $9 a week.

Loom fixers: For 56 looms colored work, $1.75 a day; 84 looms white work, $1.75 a day; 100 Northrop looms, $1.75 a day.

The mills run 66 hours a week according to the statement of the employers, but the following schedule, which was given by the operatives, calls for 67 hours a week: for the first five working days of the week they start up at 6.45 A. M., stop at 12.30 P. M., allowing half an hour for dinner, and run from 1 P. M. until 6.45 P. M. Saturday the hours are from 6.45 A. M. until 4.45 P. M., with one-half hour allowed for dinner.

Atlanta, Ga.

In Atlanta the same objections from the mill men to give out figures were met with as in Augusta. Three mills were visited, one of them being the oldest in the State. There is in this city, as in all others visited, a scarcity of help, and little prospect of there being sufficient to run mills to full capacity unless operatives can be secured from some other portion of the country. One of the mills had about 8,000 spindles idle, with other machinery in proportion.

Some of the children seen going into the mills did not appear to be more than 10 years of age, and, in the words of one of the operatives, "They say they do not employ children under 12, but I know there are lots of them working in the mills that are not more than eight years old."

The wages paid in this vicinity are:

Picker room: $4.50 a week.

Carding room: Grinders, small American cards, $6.60 a week; strippers, $5.40 a week.

Drawing tenders: 48 deliveries, $5.40 a week.

Slubbing: Run two frames, $7.50 a week.

Intermediate: Run two frames, $7 a week.

Roving: Run two frames, $6 a week.

Ring spinning: 112 spindles on a side, run from four to six sides at 10 cents a side for warp and 11 cents a side for filling; earn from $2.50 to $4.25 a week. Women and young children employed in this department. Counts spun, 13s to 28s.

Slasher tenders: Four machines, slash warps for 800 looms; three men paid, $10.50, $7.50, and $4.50. Two machines, slash warps for over 600 looms; three men paid, $9.60, $6.75, and $5.40 a week. Slashers carry beams to weave room door.

Weaving: Ordinary looms, run four to eight; 36 inch, 54 yards to the cut, 3 yard sheetings, and 48 yards to the cut, 4 yard sheetings, 15 1/2 cents per cut. Northrop looms, run 18 to 20; 31 inch sheetings and shirtings, 21s warp and 22s weft, 5 yards to the pound, 60 yards to the cut, 10 cents per cut. Speed of the Northrop looms, 182 to 200 picks per minute. Operatives of Northrop looms themselves pay boys to keep the magazines full.

Loom fixers: 70 Northrop looms to a section, 100 ordinary looms; fixers paid in proportion to the production of the weavers.

These mills, like all others visited, are scheduled to run 66 hours a week, made up in about the same way. While all of the mill men interviewed desired it to be understood that their mills run only 66 hours a week, many of them run very late into the night, if not day and night wholly. Our agents, returning through South and North Carolina, counted not less than 12 mills along the railroad tracks fully lighted from bottom to top, running at 11 o'clock at night.

Every mill official visited made the same statement: That if the operatives would show some ambition to accumulate money, to be thrifty, and to work steadily, they would all have money in the bank to their credit. But, they say, they do not possess these qualities and will only work when and how they please. There is no redress for the employer in the premises—he must accept the conditions as they present themselves, owing to the scarcity of help, or go without entirely. The value of the Northern cotton mill help over that of the South, generally speaking, as an asset to successful cotton spinning, financially and otherwise, in the opinions of the mill officials here, cannot be measured in dollars and cents. Their relative qualities are so different that comparison is entirely out of the question.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

DESIGNING WITH ONE SYSTEM WARP AND TWO SYSTEMS FILLING.

This system of designing is extensively used for all classes of textile fabrics.

Fig. 1

As a general rule, in this instance, the warp forms with one filling the ground of the fabric, the second filling producing the figure by floating on said ground structure. (Another effect for this system of designing, producing by said first filling, or by the warp, additional figures to the main figure, as produced by the second filling, will be treated in a successive subject.) Although most any design can and is used for the present to be explained system of designing, yet it will be of advantage to the designer to select well broken up, as well as well distributed figures for the sketch, in order to give to the cloth all possible strength. This feature is well explained by means of sketch Fig. 1, which

Fig. 2

shows a floral design arranged after the plain setting (inverted), somewhat more than one repeat of the design being given. The figure, as can be readily seen, is of such a character as requires little, if any, stitching, a fact

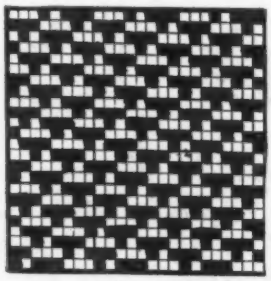


Fig. 3

which is clearly demonstrated by its execution on point paper.

PREPARING THE POINT PAPER DESIGN.

In the same only the warp and the figure picks are taken in consideration, since the cards for the ground picks are cut independent, and simply added at the lacing. Thus for the selection of the proper point paper to use, we only have to ascertain the warp and the figure picks per one inch.

Fabric for sketch Fig. 1 is to be made with a texture 80 × 160, that means

80 warp threads
80 figure picks } per 1 inch.
80 ground picks

This combination indicates the proportion of figure to ground picks to be 1 : 1, what equals 8 × 8, 10 × 10 or 12 × 12 point paper to be used.

We used 8 × 8 paper. Width of repeat in sketch 2 1/2 inches, thus 2 1/2 × 80 (warp texture) = 200 jacquard machine, i. e., 200 needles of a 200, 400 or 600 jacquard machine are required for producing the design, and which is the size of design Fig. 2.

As mentioned before, only the floating of the figure filling is indicated on the design, which is painted filling up, i. e., □ are taken for warp up when cutting the jacquard cards.

We next come to the selection of weave for the ground. In our example we used the 8 harness granite weave, Fig. 3. Care must be taken when selecting this ground weave that its repeat repeats into the number of warp threads as well as figure picks of the design. This is done with our weave, since design, Fig. 2, calls for 200 warp threads and 280 figure picks, being a multiple of 8 warp threads and 8 picks of the ground weave. This ground weave, a neat little granite weave, must be cut 35 times over to give us the 280 jacquard cards required to balance the 280 jacquard cards required for the design 2. Thus the practical execution of sketch 1 requires for its practical execution on the loom for one repeat:

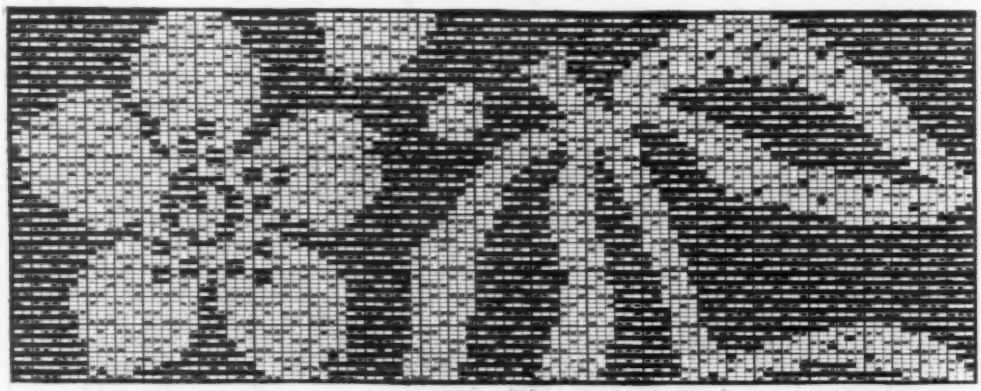


Fig. 4

200 warp threads × { 280 figure cards / 280 ground cards

= 560 jacquard cards.

In Fig. 4 the analysis of the plan of weaving is given. Picks 1, 3, 5, etc., i. e., all the

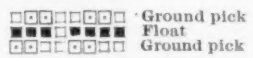
uneven number of the picks, are the ground picks = [.] type, and all the even number picks = ■ type are the figure picks. [.] and ■ = warp up. The plan Fig. 4 calls for 104 warp threads and 80 picks, and represents the working in the fabric of 104 warp threads, and 40 picks of design Fig. 2 taken from the left hand lower corner of said design.

In plan Fig. 4, we see that the figure is floating on the back when not called by the figure on the face. In a design of a character like ours this floating of the filling on the back of the fabric would be no great disadvantage, however there are any quantity of

Fig. 5

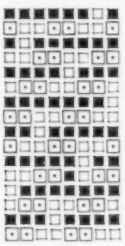
designs where excessive floating would occur, in turn proving of disadvantage to the cloth. In this case the figure pick must be stitched, not visible on the face, to the ground structure. This subject is clearly explained by means of Figs. 5 and 6. Considering ■ type only in Fig. 5, it being a duplicate of 104 warp threads and 40 picks of the lower left hand corner of design 2. The [.] indicates the places where the filling when floating on back of cloth is to be stitched not visible on face to the ground structure. The arrangement of this stitch is the 8 leaf satin.

The weave for the ground structure, and the weave for the stitching must be well understood by the designer, they each must be of such a character so as to make their combination possible without showing the floating pick on the face at any place of stitching, i. e., the interlacing must be done between two sinkers:



in this manner the combination must be done.

Fig. 6 shows the working plan for the design portion Fig. 5; shown in combination with 40 ground picks. For ground weave we selected $\frac{2}{2}$ 4 harness 45° twill ⊡ which weave permits a perfect stitching with the 8 leaf satin as this.



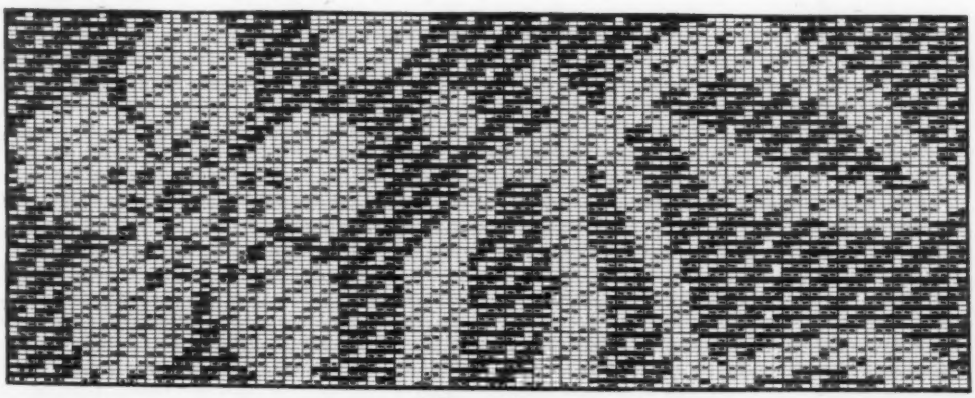


Fig. 6

■ = floating picks $\frac{1}{8}$ 8 leaf satin,

⊡ = ground picks $\frac{2}{2}$ 4 harness 45 twill

diagram, being one repeat of the combination of both weaves, clearly shows.

FINISHING WOOLENS AND WORSTEDS.

Steaming, in connection with pressing, both by means of the hydraulic as well as the rotary press, is done for two reasons, viz.: it removes the gloss on the fibres left by the heat and pressure, and at the same time takes away the harsh, hard feeling, given by this pressing process to the cloth. During pressing, every fibre in the fabric is simultaneously heated and pressed, in consequence of which they lose portions of their moisture and at the same time shrink in themelves and thus to a certain extent become glossy, harsh and hard, a feature not desirable in connection with a great many finishes. Steaming, either alone or in connection with a light brushing, will remove the glaze, and at the same time impart a softer feel to the fabric thus treated after pressing, for the reason that the dampening action of steaming swells the fibres back to their condition before pressing. Care must be exercised not to overdo the matter, nor too little, since in the latter instance the object aimed at is not obtained, whereas too much steaming will take hold not only of the fibre, but of the structure, i. e., finish of the cloth, at the same time thus impairing the latter. The proper process requires such a quantity of steam as will just remove the glaze without softening too much the finish.

For perfect steaming, allow the cloth to thoroughly cool down from the pressing process, since a highly heated fibre will not only to a considerable extent counteract the influence of the moist steam but at the same time give rise to the formation of electricity, a feature preventing a uniform and even finish to the fabric thus treated and which in turn in some instances may ruin the finish of the fabric entirely. For this reason be sure to allow the pressed fabric to cool thoroughly so that the finish becomes set or fixed before subjecting it to steaming, i. e., that the fibres, which the hydraulic or rotary press has made to assume new and unnatural positions throughout the body, as well as the face of the fabric, must have a chance to get sufficiently cold, i. e., set, so that they will retain their new positions, and will not be influenced by the after steaming.

The steaming is done by means of what is known as a steam box, the characteristics of which are a uniform steam distribution, resulting in absolute even steaming. The cloth in its passage over the box rests on the two application rolls, the shafts of which rest in journals, which in turn can be raised by means of suitable set screws, thus regulating the application of the cloth on the felt cover of the box. The ingenious construction of the box compels the steam to enter the lower and in turn the upper chamber, in such a round-about way as to result in a uniform escape of it, all over the surface of the top of the box.

When starting to operate the box, open the drip valve, enter steam and wait until the latter issues through the felt cover, and then start the cloth. After the box is thoroughly heated, close the drip valve. Leave the latter open any time the box is not in use.

This steam box, besides used independent as a machine, is also frequently found applied to other finishing machinery, viz.: in connection with a brushing machine and when the combination machine is then known as a steam brush, in connection with a stretching machine, and when the combination machine is then known as a steaming and stretching machine; it being also applied to pumicing, polishing and sanding machines, etc., etc.

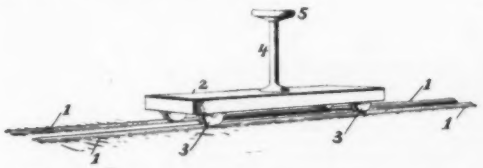
A WEAVER'S TROLLEY.

In connection with Northrop looms, as will be known, the weaver has to attend to a group or battery of from 18 to 24 looms, said looms being generally arranged in two parallel rows, facing each other, and being arranged sufficiently near each other that the alley or passage way for the weaver is only sufficiently wide enough for him to walk up and down, in order to attend to the looms, i. e., replenishing the filling feeders or hoppers with full bobbins, piecing up broken warp threads, starting up looms and permitting the removal of woven cuts of cloth. It will be readily understood that if, for example, when dealing with a battery of 24 looms, with 12 looms in each row, the weaver

has quite a walk from one end of his alley to the other, especially if we remember that he must replenish the hoppers of his looms from the main supply box placed at the end of his alley.

The object of the new device, and which we term a weaver's trolley, is to relieve the weaver of continually walking up and down his alley, at the same time facilitating his chances for attending to his looms by providing means for a quicker movement for the weaver from one loom to the other, as well as throughout the entire length of the alley. This feature, in turn, will give us a chance to increase the size of the battery of looms for one weaver, without adding more work to him than he has to do at present.

The new device consists of a track placed in the weaver's alley, i. e., between the two parallel rows of looms of one battery, and a carriage for the weaver to sit upon, said carriage being adapted to travel on the track previously referred to, from one loom to the other, or the entire length of the alley between the two rows of looms.



The accompanying illustration is a perspective view of the traveling carriage or weaver's trolley, showing also a portion of the track. It will need very little explanation on our part to explain the construction of the new device, for the fact that the same is a most simple affair, in fact explaining itself more or less alone; however, we will quote, that numeral of reference 1 indicates the track, 2 a low platform truck with four flanged wheels 3, which travel on the track 1. 4 is an upright standard or pedestal fastened to the platform-truck 2, being provided with rotatable seat, 5, for the weaver to sit upon.

This seat, 5, is of such a height that the weaver, when sitting upon it, can readily reach the hoppers of the loom in order to replenish them from the supply carried by the weaver in a sack or pocket attached to his waist, and which sack he originally filled from the receptacle or box, provided for that purpose for him, at the end of his alley. Since this seat, 5, of the trolley is rotatable or swiveled, it will be readily seen that the weaver can reach any loom of his in his battery without having to leave the seat, and that by simply grasping a portion of an adjacent loom-frame he can by a slight pull on his part propel the carriage in either direction of his alley along its track; the only time that he will be compelled to leave the seat will be when piecing-up a warp thread, and when he has to go to the back of the loom for this purpose, a feature which however in connection with good yarn and a well managed mill will be seldom the case.

Another convenience of this trolley to the weaver is the fact that he can use the same as a truck for conveniently removing the woven bolt of cloth as coming from the loom, to the end of his alley. The use (patent) of such a carriage or trolley in connection with looms, as will be readily understood, is the property of the Draper Company.

SLUB CATCHER FOR WINDING MACHINERY.

The lump or slub catcher herewith described is the invention and patent of Wm. S. Mills, manufacturer of knit goods, Bridgeport, Conn., and D. P. Mills the agent and buyer of the Dunham Hosiery Co., of Naugatuck, Conn., who have sold their rights in the device to Tompkins Bros., Troy, N. Y., this firm having the exclusive sale. It has for its main object the certainty of catching all the lumps or slubs in the yarn which is to be wound on bobbins, cones, etc., as the case may be, by means of any one of our prominent makes of winders; in turn avoiding all danger of breaking needles if said yarn is to be used in knitting machines, or any such trouble as caused by yarn which has not been thoroughly cleaned from lumps or slubs.

Another feature in favor of the new device is its durability and also its simplicity of construction, the latter feature of which will be seen by referring to the accompanying illustration, of which Fig. 1 is a side elevation of the slub-catcher, Fig. 2 a view of the same

with the card clothing turned back, or out of action, and Fig. 3 a transverse section of the guide plate taken on the line x-x, of Fig. 2, with the parts lying beyond said line in elevation.

In the illustrations, 1 indicates the guide plate of the slub catcher, said plate being of oblong shape, and forms the base of the catcher. At each end it is provided with an ear 2, and by means of which it may be fastened to the guide bar of any yarn winding machine, and at the same time in such a position so as to have the yarn or thread drawn somewhat taut over the top of

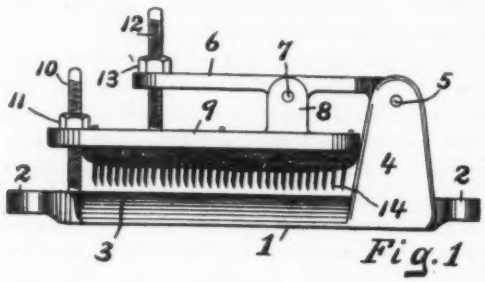


Fig. 1

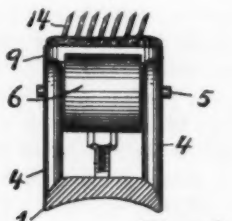


Fig. 3

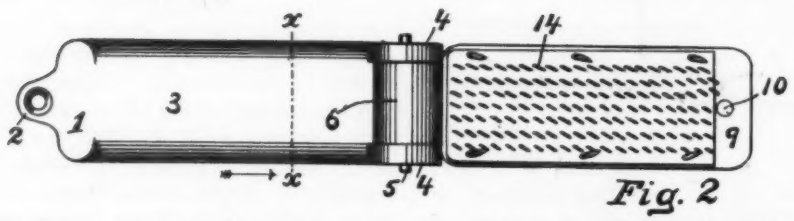


Fig. 2

said plate. This plate has a flat middle portion 3 and rounded edges, it also being highly polished so that the yarn or thread will run over it with as little friction as possible.

On one end of this guide plate 1, is situated a pair of bracket ears 4, each having a hole at its upper end, into which fits a pivot pin 5, acting as a pivot for lever 6. In the middle of this lever is pivoted, by means of a pin 7 and lugs 8, a card-clothing plate 9, which is provided at its opposite end with an adjustable screw 10, and lock nut 11. In like manner, lever 6 is provided with adjusting screw 12 and lock nut 13, placed at the end farthest from the bracket ears 4. Upon the under side of the card clothing plate is secured a piece of card clothing 14, or any similar series of sharp pointed teeth, as shown in illustration.

The operation of using the slub catcher is as follows:—After the apparatus has been fastened to the yarn winding machine, a gauge is first used to set the card clothing 14 the required distance from the guide plate, this distance being greater or less, according to the size or thickness of the yarn under operation. This gauge, which consists of a flat piece of metal, or some hard material, of the same thickness as the yarn to be wound, is placed on the polished surface of the guide plate 1, and the card clothing plate brought down tightly against it, the adjusting screws of the two levers 6 and 9 having been previously loosened, and turned back far enough so as not to interfere with the setting of the card clothing plate. After the card clothing plate has been brought down level to the top of the gauge, the screws can now be turned down to their bearings, and the lock nuts tightened up, when after removing the gauge plate the device is ready for use, and which, when properly adjusted will assume the position as shown in Fig. 1.

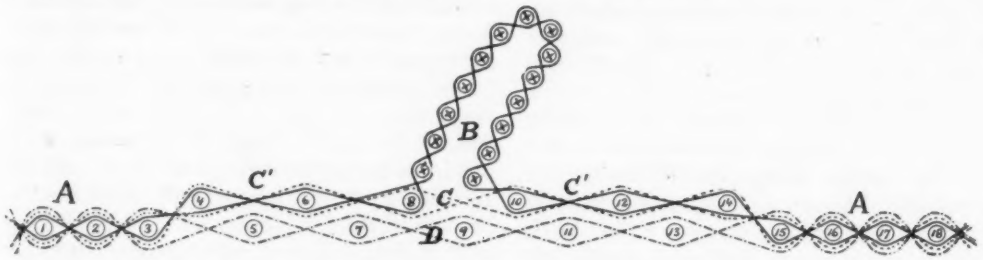
The yarn is now placed over the polished surface of the plate and winding commenced.

However, if during the winding, a slub or lump thicker than the required size passes up to the guide plate, it is in turn caught by

the card-clothing 14, Then, in order to pull off the lump or slub from the body of the yarn, the levers 9 and 6 are lifted and swung back on pivot 5 into the position as shown in Figs. 2 and 3, and the lump or slub broken out. After this has been accomplished, the yarn is readjusted, the levers and connecting parts of the device brought back into their former position, and then the catcher is again ready for use.

A NOVELTY IN TUCK WEAVING.

Woven tuck fabric structures as produced until now have been formed in "one-ply," i. e., without a continuous woven portion extending at the bottom or base of the tuck, and when consequently the warp threads of such a structure will always more or less draw under a slight pull or strain on the fabric; a feature which as will be readily understood, is objectionable to the consumer of the fabric. To overcome this disadvantage is the object of the new fabric structure, as lately patented by the United Silk Manufacturing Company of Providence, R. I., and in which



construction any strain on the fabric is not communicated to the warp threads of the tuck, as in the case in connection with former makes; but is sustained by the other warp, the structure, i. e., the woven portion extending at the bottom of the tuck, thus preventing the tucks from drawing or pulling out. This feature will readily explain that the new structure will result in a stronger tuck than such as made before, the new fabric structure being well suited for dress goods, etc.

In order to convey to the reader a thorough understanding of the construction of the new fabric structure, and thus show him at once its advantages over the old method of tuck weaving, the accompanying illustration is given, the same being a diagramatical section of the new way of weaving tuck fabrics. It will be readily understood that the warp threads of one set, as are shown in the diagram, in its body, as well as rib or binding section, resting either above or below warp threads of another set, in the fabric structure actually rest side by side, and that the plan followed in designing the diagram being the only one possible to be pursued.

Examining our illustration, we will notice that the fabric is in the main one-ply, but that the warp threads are divided into three sets.

In the body portion A of the fabric these three sets all take the same filling, whereas at the tucks B, one set is looped and takes the filling of the tuck, and the second and third sets are divided, each to take separate picks, forming under the tucks a two-ply structure, C D, which prevents the tucks from drawing or pulling out. After passing the tuck all three sets of warp threads are merged again into one-ply.

In order to simplify matters we selected different indications for the various systems of warp threads, viz.:

Full black (———)=tuck warp.

Dot type (. . . . . .)=the rib warp (i. e., upper ply in the structure section C).

Dash and dot type (— . — . — . —)=the warp threads for the backing structure (D) for the fabric.

Numerals of reference in sections of the filling indicate the rotation of the picks for forming the body of the fabric, the extra picks for the tuck being indicated by X in their circles. A, i. e., picks 1, 2, 3 and 15, 16, 17, 18 in illustration=two body portions of the fabric, B the tuck, and C and C′ the rib or binding layer at the foot of the tuck (C minus tuck warp, C′ plus tuck warp), and D the backing portion of the structure.

It will be readily understood that the size

of the tucks as well as distance between tucks can be varied to suit any style of design desired, and fabrics may be executed in plain as well as colored effects.

THE IMPORTANCE OF SOFT WATER IN WOOLEN MANUFACTURE.

The advantages of soft water, and its beneficial influence upon the wool fibre during the various stages of manufacture into cloth, as well as upon the appearance and feel of the finished fabric, are familiar to every manufacturer. The endeavor is therefore made to have soft water at hand in sufficient quantity, or, where this is impossible, to clean the water by means of chemical and mechanical agents by precipitating the injurious mineral salts and other impurities it contains.

The use of soft water, however, has been confined principally to those operations for which hard water could never be employed, or at least without great disadvantages. Such operations are the washing of the wool and the fabric and the dyeing. The injurious effect of water containing lime or magnesia is strikingly manifested in these operations. The dyer notices it at once in the behavior of the mordanting or dye bath, and still more in the matching of colors on wool or on cloth, whether the water used is too hard or not. The wool washer and the fuller detect it quickly by the foam, as well as by the small flakes of lime soap floating in and upon the surface of the rinsing water, but most surely by the slippery feel and cloudy appearance of the wool or cloth.

Besides these operations, however, there are many others in the woolen industry in which the water, directly or indirectly, plays an important part, and in which very little attention is generally paid to the condition of the water. To this class belong the carbonizing, fulling and gigging processes. Although the condition of the water is not of so great importance here as in washing and dyeing, yet it makes a considerable difference whether the water is hard or soft.

The effect of the lime or magnesia salts in the water upon soap is well known. The latter decomposes almost instantaneously by its contact with these substances and forms a lime or magnesia soap, a product injurious in every way to the wool. Soap plays a twofold part in the fulling process; first, as detergent, that is, for loosening the dirt and oil, as well as for keeping open the serratures of the fibre, by which at the same time the felting process is promoted; and, secondly, as a protection of the fibre against friction and heat, the latter especially making it rough and brittle. In the former case the action is produced by the alkali with its cleansing effect; in the latter, by the fat, which keeps the fibre soft and pliable.

It is evident that substances having a decomposing effect upon the soap exert a detrimental influence upon the processes of cleansing and felting, and interfere with the preservation of the good qualities of the fibre. This coincides fully with all practical experience. As early as the starting of the fulling liquor, a solution of the soap in water, with hard water, a part of the soap is decomposed. This is at first of less consequence, there being always an excess of soap present. It causes a loss of soap, however, and besides this, the lime soap formed does not at all contribute to the improvement of the lye. As soon, however, as the cloth is treated again with soap, it will be noticed at once that the latter continues to decompose. Instead of being soft and sappy, the cloth has a rough and dry feel, and instead of a light soap foam, a thin, watery, weak lye is obtained and absorbed by the cloth, and only after the repeated addition of soap, and after all hard constituents of the water have been absorbed, does the proper amount of sappiness and formation of foam commence.

The cloth fulled with hard water will, as experience shows, run dry oftener, part with fibres more freely than it should, and require frequent additions of lye. Besides this, the lime soap precipitated upon the fibre cannot entirely be removed in spite of washing, making the cloth hard and slippery in feel.

If, in place of soap lye, water is occasionally poured in towards the end of the fulling process, because too much soap has already been added, the evil becomes still greater. Economy is never more dangerous than in just such a case. By fulling with hard water a much larger quantity of soap is needed, and

the more it is stinted the harder and rougher becomes the cloth. Besides this, the more neutral and rich in fat is the soap, the more injurious will be the effect of hard water upon it, while soap of a more basic character decomposes less easily. The difference in the qualities of water explains why it is that a good fulling soap does not act at all times with the same good effect. Soap manufacturers, in view of the satisfactory results obtained by the use of their products in some instances, are often astonished when told that their soaps are useless, but the explanation of this is apparent.

Mills having only hard water at disposal should purify it, not only for dyeing and washing, but also for fulling purposes. No water is more suitable for fulling than distilled or condensed water, as it comes from the steam engine, heating coils, and other steam apparatus. The good qualities of soap are best retained and promoted by this kind of water. The fabric remains moist much longer and does not require so much subsequent manipulation, and it remains softer.

Provided hard water is the only one at your disposal, it should be first softened by the addition of a strong solution of granulated carbonate of soda, the amount required to be added depending on the hardness of the water.

A chemist determines the degree of hardness of water by the amount of soap the water will destroy. An alcoholic solution of soap is dropped carefully into a measured amount of distilled water containing a known amount of a lime salt. The value of a cubic centimeter being determined, the soap solution is dropped from the graduated tube into a measured amount of the water to be tested, and when a permanent lather is produced by shaking, the amount of soap-solution is noted and the hardness of the water calculated.

The Holbrook Manufacturing Co. state that one grain of their granulated carbonate of soda will precipitate about one and a half grains of sulphate of lime (soluble in water) as carbonate of lime (insoluble in water). Nearly all water contains some lime, and may have as much as fifty grains to the gallon. It is therefore necessary to experiment with the water to be used, and discover the amount of granulated carbonate of soda required to precipitate the dissolved salts of lime and magnesia.

To test for the presence of lime and magnesia, the Holbrook Manufacturing Co. advises to fill a clean tumbler with hot water and add a few drops of a strong solution of their granulated carbonate of soda. A milky appearance followed by a white precipitate shows their presence.

If water contains five grains of lime and magnesia to the gallon, every 1,000 gallons will destroy over ten pounds of neutral soap; and if 10,000 gallons are used in a day, 100 pounds of soap will have been used to kill the mineral salts, when five and a quarter pounds of Holbrook granulated carbonate of soda would have done the same work and with no dangerous scum. Once the scum is formed, no amount of soap, granulated carbonate soda, or lye will get rid of it again. The precipitate of the carbonates of lime and magnesia will settle to the bottom of the vat. Have a large tank of known capacity provided with a steampipe to bring the water to a boil, add the proper amount of granulated carbonate soda necessary to precipitate the lime and magnesia, and allow to settle. Draw from the tank several inches above the bottom, for the supply to make up the soap-liquor, and for washing and rinsing.

A NEW LUG-STRAP HOLDER

is the invention of A. F. Schofield of Stafford Springs, Conn., and has for its purpose to provide an efficient device by means of which the lug-strap can be adjusted on its picker stick without having to use bolts or screws for this purpose and which in turn weakens the strap, reduces its life and at the same time increases the liability of breakage. Again for the fact that the new holder is clamped to the picker stick (in any desired position) no hole is required to be made in the picker stick, a feature which in turn will also lengthen the life of the picker stick itself, since said holes as a rule are frequently the cause of the breaking of the picker stick, i. e., its weakest point.

In order to give a better explanation of the new device, the accompanying three illustrations are given, and of which Fig. 1 is

a front elevation of a portion of a picker stick, showing the new holder applied thereto. Fig. 2 is a section on the line, x, of Fig. 3, the picker stick being shown in dotted lines. Fig. 3 is a section on the line, y y, of Fig. 2.

Numerals of references accompanying the illustrations indicate thus: 1 the picker stick and 2 the lug-strap, which is connected at 3 to the picking-arm, 4, of the loom. The new lug-strap holder consists in a plate, 5, resting against the outer face of the picker stick, said

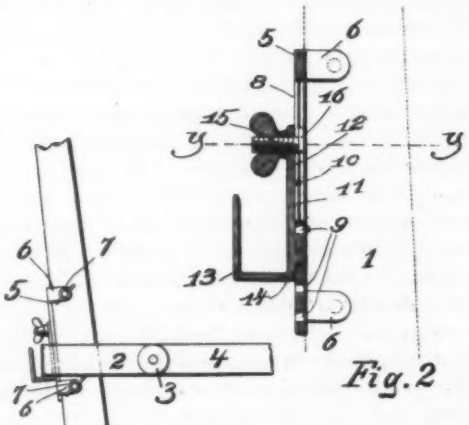


Fig. 2

Fig. 1

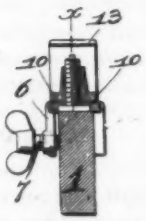


Fig. 3

plate having two pairs of arms, 6, projecting therefrom, between which the picker stick is received. Each pair of arms, 6, is provided with a clamping screw, 7, by means of which the plate, 5, is clamped on the picker stick. Said plate, 5, is provided with a slot, 8, and a plurality of apertures, 9. Slot 8 has its edges rabbeted to form the shoulders, 10. A hook-shaped member, 11, is provided to receive the lug-strap, 2, said member having a stem, 12, and hook portion, 13, also a projection, 14, adapted to enter one of the apertures, 9, and carries at its end a clamping screw, 15, the head, 16, of which engages the shoulders, 10, of the slot, 8. The loop of the lug-strap, 2, encircles the picker stick, 1, as usual, and in turn is received in the hook of the member, 11, which can be adjusted up and down upon the plate, 5, and the latter again can be adjusted up and down on the picker stick, 1, thus giving to the new device a great range of adjustment.

After the device has been properly adjusted, clamping screw 15 furnishes the means for securely clamping the member 11, and thus the new device, in its adjusted position, projection 14 serving as means to to prevent any lateral movement thereof.

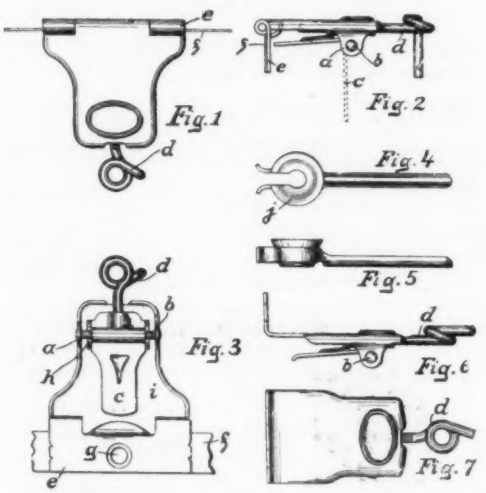
A METALLIC THREAD BOARD AND YARN GUIDE.

This is an English device, lately patented in this country, by its inventor, J. Appleby of Aston, Birmingham, Eng.

In some respects it is based in its principles of construction very much on the same lines as a tie clip, for the idea found there has been utilized as a simple means for inserting the guides and holding them in place. To insert a guide a small lever is released and the guide inserted in the mouth thus formed. The small lever is then clipped back, and when at the same time the guide becomes firmly held in position. There is some side play allowed to the clip, so that the guide can be adjusted laterally whilst the small lever is in its loose position. At the same time the guide can be pushed farther in or pulled out, so that a perfect means of truing it with the spindle is provided. When once snapped into place, the lever holds the guide firmly in the position in which it has been placed, yet it is always a very easy matter to readjust. The wearing portions of the thread board are hardened and tempered, as are also the guides where the thread is likely to groove them.

In order to convey to the reader a complete idea of the new device, the accompanying series of illustrations are given, and of which Fig. 1 is a plan, and Fig. 2 a side view of the complete thread board flap with combined guide and snarl catcher in position for service and secured upon a metal strip for attachment to the rail of the machine. Fig. 3 is a view showing the front hinged portion

of the flap with the guide and snarl catcher secured thereto thrown back to its out-of-service position in order to present a view of the underside of the new device. Fig. 4 is a plan and Fig. 5 a side view, of what is known as a "pot-eye" type of guide, as adapted for use in connection with wet twisting. Fig. 6 is a side view and Fig. 7 a plan of a support or holder, formed with the front and back portions from one piece or blank of metal and fitted with the self-locking or snap fastening device for holding a thread guide, but without snarl catcher.



With reference to Figs. 1 to 3, we find the thread board flaps, i. e., the hinged support for the thread guide and snarl catcher, stamped from a pair of steel blanks, and in turn shaped (pressed) as shown, the front section being shaped so that its bent-up ears or lugs, a, serve as bearing or supports for a pin, b, on which is mounted the lever-like grip piece or snap, c, for securing the combined guide and snarl catcher, d, in any position within its range of adjustment; e indicates the back section of the thread board flap and which in turn is fastened to a metal strip, f, or the thread board rail if so desired. The strip f, having the thread board flaps fixed thereto, is then secured to the rail of the machine by screws inserted through apertures g. When the grip lever, c, is in the position shown by dotted lines at Fig. 2, the guide and snarl catcher, d, can be pushed in or drawn out to any position within the limits fixed by the length of its shank or stem part, or it may be entirely withdrawn, if desired; but when the grip lever is pulled or pressed up to the full line position in the said figure, the guide, d, is securely held in the desired position. To permit of the adjustment of the guide, d, in both longitudinal and transverse directions, a friction plate, h (see Fig 3), is interposed between the lever grip, c, and the inner surface of the front portion, i, of the holder, which on the release of the grip lever, c, by depressing it to the dotted-line position shown in Fig. 2, is free to slide between the ears or bearing pieces, a, upon the lever pivot pin, b.

The pot eye type or guides shown in Figs. 4 and 5 are made from flat steel strips pressed or formed to the shape shown, and with spring-like jaws at one end for gripping the pot or porcelain eye, j.

With reference to Figs. 6 and 7, a thread board flap made of one section, i. e., one piece only, is shown.

NOVELTIES FROM FOREIGN SOURCES.

Worsted Suiting.

Complete Weave.

Repeat 2×2.

Warp:—3160 ends, 8 or 12 harness straight draw.

Reed:—16½×3=64 inches wide in loom.

Dress:—

1 end,	2/60's worsted, blue	= 1 end
1 end,	2/40's worsted, dark and light gray	= 1 end
2 ends,	2/40's worsted, light gray	= 2 ends
1 end,	2/40's worsted, green	= 1 end
1 end,	2/40's worsted, dark and light gray	
2 ends,	2/40's worsted, light gray	× 6 = 24 ends
1 end,	2/40's worsted, dark and light gray	
1 end,	2/40's worsted, dark and light gray	= 1 end
2 ends,	2/40's worsted, dark and light gray	
4 ends,	2/40's worsted, light gray	× 6 = 48 ends
2 ends,	2/40's worsted, dark and light gray	
2 ends,	2/40's worsted, light gray	
2 ends,	2/40's worsted, dark and light gray	× 4 = 16 ends
2 ends,	2/40's worsted, light gray	= 2 ends

Repeat of pattern: 96 ends

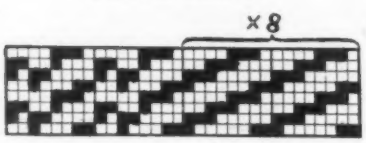
Filling:—48 picks per inch, arranged thus:

1 pick,	2/60's worsted, green	= 1 pick
2 picks,	2/40's worsted, light gray	= 2 picks
1 pick,	2/40's worsted, dark and light gray	= 1 pick
1 pick,	2/60's worsted, blue	= 1 pick
2 picks,	2/40's worsted, light gray	
2 picks,	2/40's worsted, dark and light gray	× 7 = 28 picks
4 picks,	2/40's worsted, light gray	
4 picks,	2/40's worsted, dark and light gray	× 6 = 48 picks
2 picks,	2/40's worsted, light gray	
2 picks,	2/40's worsted, dark and light gray	× 7 = 28 picks
2 picks,	2/40's worsted, light gray	= 2 picks
1 pick,	2/40's worsted, dark and light gray	= 1 pick

Repeat of pattern: 112 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 144×4.

Warp:—7776 ends, 16 harness fancy draw.

Reed:—15×8=64¾ inches wide in loom.

Dress:—

2 ends, 2/48's worsted, pearl.
2 ends, 2/48's worsted, gray and white
4 ends, 2/48's worsted, light gray. } × 2=16
2 ends, 2/48's worsted, pearl = 2
2 ends, 2/48's worsted, light gray.
2 ends, 2/48's worsted, gray and white } × 4=16
14 ends, 2/48's worsted, light gray =14
} × 2= 96 ends

2 ends, 2/48's worsted, pearl.
2 ends, 2/48's worsted, gray and white
4 ends, 2/48's worsted, light gray } × 2= 16 ends

2 ends, 2/48's worsted, pearl = 2 ends

2 ends, 2/48's worsted, light gray
2 ends, 2/48's worsted, gray and white } × 4= 16 ends

2 ends, 2/52's worsted, green = 2 ends
8 ends, 2/48's worsted, light gray = 8 ends
4 ends, 2/52's worsted, black = 4 ends

2 ends, 2/48's worsted, pearl.
2 ends, 2/48's worsted, gray and white } × 2=16
4 ends, 2/48's worsted, light gray.
2 ends, 2/48's worsted, pearl = 2
2 ends, 2/48's worsted, light gray.
2 ends, 2/48's worsted, gray and white } × 4=16
14 ends, 2/48's worsted, light gray =14
} × 2= 96 ends

2 ends, 2/48's worsted, pearl.
2 ends, 2/48's worsted, gray and white.
4 ends, 2/48's worsted, light gray. } × 2= 16 ends

2 ends, 2/48's worsted, pearl = 2 ends

2 ends, 2/48's worsted, light gray.
2 ends, 2/48's worsted, gray and white. } × 4= 16 ends

2 ends, 2/52's worsted, blue = 2 ends
8 ends, 2/48's worsted, light gray = 8 ends
4 ends, 2/48's worsted, black = 4 ends

Repeat of pattern: 288 ends

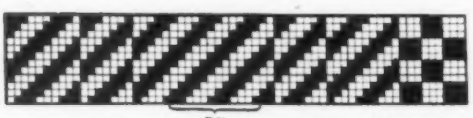
Filling:—60 picks per inch, arranged thus:

1 pick, 2/52's worsted, green = 1 pick
2 picks, 2/40's worsted, black = 2 picks
4 picks, 2/52's worsted, black and gray.
4 picks, 2/40's worsted, black. } × 9=72 picks
4 picks, 2/52's worsted, black and gray = 4 picks
1 pick, 2/40's worsted, black = 1 pick
1 pick, 2/52's worsted, blue = 1 pick
2 picks, 2/40's worsted, black = 2 picks
4 picks, 2/52's worsted, black and gray.
4 picks, 2/40's worsted, black. } × 9=72 picks
4 picks, 2/52's worsted, black and gray = 4 picks
1 pick, 2/40's worsted, black = 1 pick

Repeat of pattern: 160 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 76×6.

Warp:—5100 ends, 12 harness fancy draw.

Reed:—25 @ { 11 dents @ 3 ends, 1 dent @ 4 ends, 2 dents @ 3 ends, 1 dent @ 4 ends, 9 dents @ 3 ends } =66 inches wide in loom.

Dress:—

9 ends, 2/52's worsted, black = 9 ends
2 ends, 2/52's worsted, black and white silk twist
1 end, 2/52's worsted, black
2 ends, 2/52's worsted, black and white silk twist } × 2= 10 ends
7 ends, 2/52's worsted, dark gray = 7 ends
2 ends, 2/52's worsted, black and white silk twist
1 end, 2/52's worsted, black
2 ends, 2/52's worsted, black and white silk twist } × 2= 10 ends
11 ends, 2/52's worsted, black = 11 ends
2 ends, 2/52's worsted, black and white silk twist
1 end, 2/52's worsted, black
2 ends, 2/52's worsted, black and white silk twist } × 2= 10 ends
7 ends, 2/52's worsted, dark gray = 7 ends
2 ends, 2/52's worsted, black and white silk twist
1 end, 2/52's worsted, black
2 ends, 2/52's worsted, black and white silk twist } × 2= 10 ends

Repeat of pattern: 74 ends

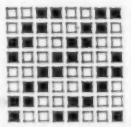
Filling:—80 picks per inch, arranged thus:

2 picks, 2/52's worsted, black and white silk twist
1 pick, 2/52's worsted, black..
2 picks, 2/52's worsted, black and white silk twist } × 2=10 picks
7 picks, 2/52's worsted, dark gray = 7 picks
2 picks, 2/52's worsted, black and white silk twist
1 pick, 2/52's worsted, black
2 picks, 2/52's worsted, black and white silk twist } × 2=10 picks
11 picks, 2/52's worsted, black = 11 picks

Repeat of pattern: 38 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.

Repeat 4×4.

Warp:—3805 ends, 12 or 16 harness straight draw.

Reed:—14½×4=65½ inches wide in loom.

Dress:—

3 ends, 2/64's worsted, black, twisted over with 200/2 silk, white.
1 end, 2/36's worsted, dark gray.
1 end, 2/64's worsted, black, twisted over with 200/2 silk, white.
2 ends, 2/36's worsted, light gray.
1 end, 2/36's worsted, dark gray. } × 6= 48 ends
3 ends, 2/64's worsted, black, twisted over with 200/2 silk, white = 3 ends
1 end, 2/36's worsted, dark gray = 1 end
1 end, 2/64's worsted, black, twisted over with 200/2 silk, white = 1 end
2 ends, 2/36's worsted, light gray = 2 ends
1 end, 2/64's worsted, brown = 1 end
2 ends, 2/64's worsted, black, twisted over with 200/2 silk, white.
2 ends, 2/36's worsted, dark gray. } × 14= 56 ends

Repeat of pattern: 112 ends

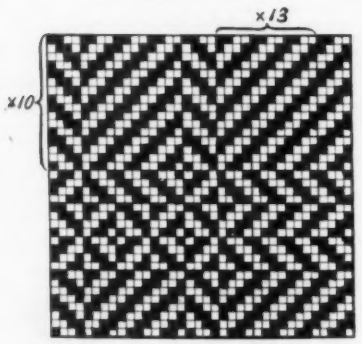
Filling:—65 picks per inch, arranged thus:

1 pick, 2/64's worsted, brown = 1 pick
2 picks, 2/36's worsted, light gray.
2 picks, 2/36's worsted, black. } × 14=56 picks
3 picks, 2/36's worsted, light gray.
1 pick, 2/36's worsted, black.
1 pick, 2/36's worsted, light gray.
3 picks, 2/36's worsted, black. } × 6=48 picks
3 picks, 2/36's worsted, light gray = 3 picks
1 pick, 2/36's worsted, black = 1 pick
1 pick, 2/36's worsted, light gray = 1 pick
2 picks, 2/36's worsted, black = 2 picks

Repeat of pattern: 112 picks

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 180×180.

Warp :—5115 ends, 12 harness fancy draw.

Reed:—19½×4=65½ inches wide in loom.

Dress :—

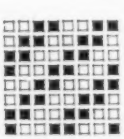
1 end, 2/64's worsted, black and pearl twist ....
1 end, 2/64's worsted, black ..... } × 43= 86 ends
3 ends, 2/64's worsted, black and pearl twist.....= 3 ends
1 end, 2/64's worsted, black.....
1 end, 2/64's worsted, black and pearl twi-t..... } × 5= 10 ends
3 ends, 2/64's worsted, black and pearl twi-t.....= 3 ends
1 end, 2/64's worsted, black and pearl twist.....
1 end, 2/64's worsted, black..... } × 5= 10 ends
3 ends, 2/64's worsted, black and pearl twist.....= 3 ends
1 end, 2/64's worsted, black.....
1 end, 2/64's worsted, black and pearl twist..... } × 32= 64 ends
1 end, 2/64's worsted, black.....= 1 end

Repeat of pattern: 180 ends

Filling :—70 picks per inch, same arrangement, counts and colors as used in warp.

Finish :—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.

Repeat 4×4.

Warp :—4112 ends, 12 or 16 harness straight draw.

Reed:—15½×4=66 inches wide in loom.

Dress:—

3 ends, 2/40's worsted, dark brown.....
1 end, 1/32's worsted, black, and 1/64's white, twist .....
1 end, 2/40's worsted, dark brown.....
3 ends, 1/32's worsted, black, and 1/64's white, twist .....
3 ends, 2/40's worsted, fancy mix.....
1 end, 1/32's worsted, black, and 1/64's white, twist .....
1 end, 2/40's worsted, fancy mix.....
3 ends, 1/32's worsted black, and 1/64's white, twist .....
2 ends, 2/40's worsted, dark brown.....
2 ends, 1/32's worsted, black, and 1/64's white, twist .....
2 ends, 2/40's worsted, fancy mix.....
2 ends, 1/32's worsted, black, and 1/64's white, twist .....
1 end 2/52's worsted, red.....= 1 end
1 end, 2/40's worsted, dark brown .....= 1 end
2 ends, 1/32's worsted, black, and 1/64's white, twist...= 2 ends
2 ends, 2/40's worsted, fancy mix.....= 2 ends
2 ends, 1/32's worsted, black, and 1/64's white, twist...= 2 ends
1 end, 2/52's worsted, red.....= 1 end
1 end, 2/40's worsted, dark brown.....= 1 end

(× 4= 64 ends; × 3= 24 ends)

2 ends, 1/32's worsted, black, and 1/64's white, twist .....
2 ends, 2/40's worsted, fancy mix.....
2 ends, 1/32's worsted, black, and 1/64's white, twist .....
2 ends, 2/40's worsted, dark brown.....
2 ends, 1/32's worsted, black, and 1/64's white, twist...= 2 ends
2 ends, 2/40's worsted, fancy mix.....= 2 ends
2 ends, 1/32's worsted, black, and 1/64's white, twist...= 2 ends

(× 3= 24 ends)

Repeat of pattern: 128 ends

Filling :—64 picks per inch, arranged thus:

3 picks, 1/32's worsted, black, and 1/64's white, twist .....
1 pick, 2/40's worsted, fancy mix.....
1 pick, 1/32's worsted, black, and 1/64's white, twist .....
3 picks, 2/40's worsted, fancy mix.....
3 picks, 1/32's worsted, black, and 1/64's white, twist .....
1 pick, 2/40's worsted, dark brown.....
1 pick, 1/32's worsted, black, and 1/64's white, twist .....
3 picks, 2/40's worsted, dark brown.....

(× 4= 64 picks)

2 picks, 1/32's worsted, black, and 1/64's white, twist .....
2 picks, 2/40's worsted, fancy mix.....
2 picks, 1/32's worsted, black, and 1/64's white, twist .....
2 picks, 2/40's worsted, dark brown .....

(× 4= 32 picks)

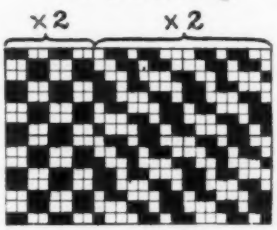
2 picks, 1/32's worsted, black, and 1/64's white, twist ..= 2 picks
2 picks, 2/40's worsted, fancy mix .....= 2 picks
2 picks, 1/32's worsted, black, and 1/64's white, twist ..= 2 picks
1 pick, 2/40's worsted, dark brown .....= 1 pick
1 pick, 2/52's worsted, red.....= 1 pick
2 picks, 1/32's worsted, black, and 1/64's white, twist ..= 2 picks
2 picks, 2/40's worsted, fancy mix.....= 2 picks
2 picks, 1/32's worsted, black, and 1/64's white, twist ..= 2 picks
1 pick, 2/40's worsted, dark brown .....= 1 pick
1 pick, 2/52's worsted, red.....= 2 picks
2 picks, 1/32's worsted, black, and 1/64's white, twist .....
2 picks, 2/40's worsted, fancy mix.....
2 picks, 1/32's worsted, black, and 1/64's white, twist .....
2 picks, 2/40's worsted, dark brown.....

(× 4= 32 picks)

Repeat of pattern: 144 picks

Finish :—Worsted finish, 56 inches wide.

Fall Overcoating.



Complete Weave. Repeat 48×8.

Warp :—2725 ends, 10 harness fancy draw.

Reed :—19½×2=70 inches wide in loom.

Dress :—

2 ends, 3⅛ run woolen yarn, light gray.....
2 ends, 2 ply, 7 run, black and white twist..... } × 7= 28 ends
6 ends, 3⅛ run woolen yarn, dark gray .....= 6 ends
2 ends, 2 ply, 7 run, black and white twist.....
2 ends, 3⅛ run woolen yarn, light gray ..... } × 27=108 ends
2 ends, 2 ply, 7 run, black and white twist .....= 2 ends

Repeat of pattern: 144 ends

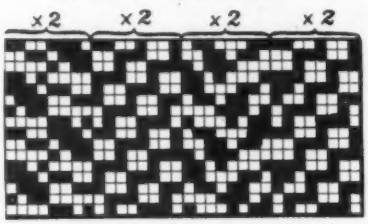
Filling :—46 picks per inch, arranged thus:

4 picks, 3⅛ run woolen yarn, dark gray
172 picks, 3⅛ run woolen yarn, black

176 picks. Repeat of pattern.

Finish :—Cheviot finish, 56 inches wide.

Worsted Trousering.



Complete Weave. Repeat 64×8.

Warp:—4830 ends, 12 harness fancy draw.

Reed:—18×4=67 inches wide in loom.

Dress:—

4 ends, 2/48's worsted, black.....= 4 ends
8 ends, 2/48's worsted, dark gray .....= 8 ends
4 ends, 2/48's worsted, black.....= 4 ends
1 end, 2/64's worsted, black and red twist .....= 1 end
1 end, 2/48's worsted, black
1 end, 2/48's worsted, dark gray.....
2 ends, 2/48's worsted, black ..... } × 4= 16 ends
5 ends, 2/48's worsted, black.....= 5 ends
1 end, 2/48's worsted, dark gray .....= 1 end
2 ends, 2/48's worsted, black and white, twist, twisted over with 120/2 white, mercerized cotton .....= 2 ends
1 end, 2/48's worsted, dark gray .....= 1 end
8 ends, 2/48's worsted, black.....= 8 ends
1 end, 2/48's worsted, dark gray.....
3 ends, 2/48's worsted, black..... } × 3= 12 ends
1 end, 2/48's worsted, dark gray.....= 1 end
1 end, 2/48's worsted, black.....= 1 end

Repeat of pattern: 64 ends

Filling:—72 picks per inch, all 2/48's worsted, plain black.

Finish:—Worsted finish, 56 inches wide.

Worsted Suiting

Complete Weave. Repeat 4 × 4.

Warp: — 3300 ends, 12 harness straight draw.

Reed: — 12½ × 4 = 66 inches wide in loom.

Dress: —

1 end, 2/52's worsted, green (double).....= 1 end
2 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray ...
2 ends, 2/28's worsted, brown-olive..... } × 3= 12 ends
2 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray .....= 2 ends
1 end, 2/28's worsted, brown-olive.....= 1 end
1 end, 2/52's worsted, red (double).....= 1 end
2 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray...
2 ends, 2/28's worsted, brown-olive ..... } × 8 = 32 ends
4 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray ...
4 ends, 2/28's worsted, brown-olive..... } × 5 = 40 ends
2 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray...
2 ends, 2/28's worsted, brown-olive..... } × 7 = 28 ends
2 ends, 2/48's worsted, black and white, twisted over with single 24's worsted dark-gray .....= 2 ends
1 end, 2/28's worsted, brown-olive.....= 1 end

Repeat of pattern: 120 ends

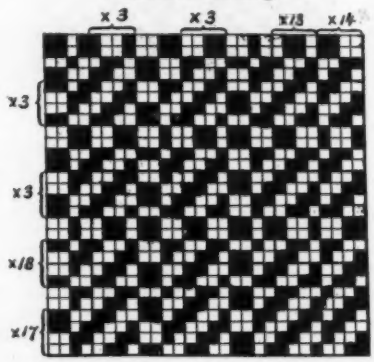
Filling: — 52 picks per inch, arranged thus:

1 pick, 2/52's worsted, blue (double) .....= 1 pick
2 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted black
2 picks, 2/28's worsted, dark brown..... } × 3= 12 picks
2 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted black.....= 2 picks
1 pick, 2/28's worsted, dark brown.....= 1 pick
1 pick, 2/52's worsted, green (double).....= 1 pick
2 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted black .....
2 picks, 2/28's worsted, dark brown ..... } × 9=36 picks
4 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted black .....
4 picks, 2/28's worsted, dark brown..... } × 5=40 picks
2 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted, black.....
2 picks, 2/28's worsted dark brown ..... } × 8=32 picks
2 picks, 2/48's worsted, black and light gray twisted over with single 24's worsted black .....= 2 picks
1 pick, 2/28's worsted, dark brown .....= 1 pick

Repeat of pattern: 128 picks

Finish: — Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave. Repeat 144 × 176.

Warp:—4150 ends, all 2/48's worsted, 12 harness fancy draw.

Reed:—16×4=64½ inches wide in loom.

Dress:—

2 ends, blue and green
14 ends, dark and medium gray
2 ends, blue and green
14 ends, medium and light gray
2 ends, slate and white
2 ends, medium and light gray
18 ends, dark gray and medium gray
18 ends, dark gray and light gray
18 ends, dark and medium gray
1 end, slate and white
16 ends, gray and light gray
1 end, slate and white
18 ends, dark and medium gray
18 ends, medium and light gray

144 ends. Repeat of pattern.

Filling:—70 picks per inch, all 2/48's worsted, arranged thus:

10 picks, olive and drab
22 picks, olive
22 picks, olive and drab
22 picks, olive
1 pick, black and gray
20 picks, olive and drab
1 pick, black and gray
22 picks, olive
22 picks, olive and drab
2 picks, green and red
14 picks, olive
2 picks, green and red
4 picks, olive
10 picks, olive and drab
2 picks, black and gray

176 picks. Repeat of pattern.

Finish: — Worsted finish, 56 inches wide.

It is said that the curves in the horns of a sheep increase in direct proportion to the curliness of the wool.

DRAWING.

The cotton, after having passed through the carding or combing process, as the case may be, is next subjected to the process of drawing. Although the process of drawing is very simple in comparison with the other processes in the manufacture of yarn, yet it is one of the most important in the production of perfect yarn.

Broadly speaking, there are, in every process through which the cotton passes, two objects that are aimed at, the first one being to carry the cotton under operation a step further toward the final product in the process of manufacture, the second being to eliminate as far as possible all defects which are in the cotton, after said cotton has passed through the preceding processes.

With reference to the carded sliver, the main defects to be corrected are the more or less tangled condition of the fibres composing the sliver, which is due to the manner in which the cotton is taken from the cylinder by the doffer, but which is necessary in that machine in order to give the sliver enough strength to be properly delivered from it, and the unevenness of the sliver produced which is unavoidable, owing to the unevenness of the scutcher lap which is fed to the card. The cotton after being carded by cylinder and flats is then condensed on the doffer for the reason that the cylinder has a circumferential speed of over 2,000 feet per minute, while the doffer has only a circumferential speed of less than 100 feet per minute, or, in other words, the doffer has to take on its surface about twenty times the amount of cotton on the same surface of the cylinder, a feature which cannot help but cross and overlap individual fibres in the film of cotton, as stripped from the doffer by the stripping comb, the latter process still further disarranging the former parallel condition of the fibres, which thus are delivered from the card in the shape of a sliver of more or less crossed and disarranged fibres. However, this sliver has a great advantage in the fact that the fibres composing it are not entangled with one another, since in the previous process of carding they have been separated, and consequently will readily assume a straightened and paralleled position if the sliver be pulled slightly end ways.

In the case of the sliver as made on the comber, the fibres composing it have by that process been set almost parallel, so that the principal defect to remedy at drawing is the more or less unevenness in the slivers.

The tangled fibres in carded sliver, which cross each other in all directions, are in the process of drawing placed into approximately parallel order by means of the drawing rolls in the machine, the method employed being to have each succeeding pair of rolls toward the front of the machine revolve at an increased speed over that pair of rolls which is just back of it, this procedure producing what is technically known as draft, the sliver thus being drawn out and the fibres in this manner being laid straight and parallel.

The distance between the individual pairs of rolls must be somewhat over the length of staple under operation, since otherwise the cotton would suffer, resulting in a weak yarn. The distance to set these rolls differs with the speed of the machine; for example, in the case of a high speed as compared with a low one, a wider space will have to be allowed, since otherwise the pull of the front rolls coming so rapidly on the fibres, almost before they leave the back rolls, will tend to break them, or more likely pull the fibres through in a lump, i. e., without drawing them. The same would also occur in connection with the heavier weight of sliver, and when by gripping such a mass of cotton at such close quarters, the tendency would be to break the fibres, although impossible, owing to their number, and what then will result is the fibres being pulled through the rolls in tufts instead of an even layer.

The sliver is worked into a more even and uniform condition by the system of doubling slivers at the back of the drawing frame, which slivers are then fed to the drawing rollers, and after passing them are condensed into one sliver at the front of the machine, this principle of doubling being identical with doubling laps in the scutcher or slivers in the sliver lap machine; that is, by combining several of the slivers into one sliver they have a tendency to equalize any defect in the evenness of individual slivers, from the

fact that thin places in one sliver come opposite thick places of another sliver, to a more or less degree, and thus tend to produce a more uniform final sliver. This principle of doubling, which makes a more uniform sliver, is best proved by the practical result obtained on the machine.

The drawing frame generally consists of four, six or eight deliveries, each delivery consisting of the drawing rolls and the coiler head arrangement which condenses the six or eight slivers which are fed to the machine into one sliver and delivers it into the can. A number of deliveries (generally six) makes up a head, there being several heads in the machine.

The slivers fed to the machines are referred to as "ends," and the machine is described as having six or eight "ends up." A machine of six deliveries with six "ends up" for each delivery will take its stock from thirty-six cans of carded or combed sliver, as the case may be, and deliver "drawn sliver" into six cans.

Drawing frames, like all other textile machinery, are known as right or left hand machines, the "hand," as indicating the position of driving pulley of a drawing frame being determined by standing in front of the machine where slivers are delivered, and noting position of driving pulley on front roll. If it is on the right, it is a right-hand frame; if it is on the left, it is a left-hand frame. The number of processes of drawing which the slivers undergo varies from two to four, the most general number being three, the latter being known as three process drawing, indicating that the sliver has been drawn and delivered three times. When using two or four processes of drawing, it is termed respectively "two" or "four process" drawing.

Weak yarn may be caused by having the cotton overdrawn, as in that case the fibres composing the sliver are strained until their natural convolutions are destroyed to such an extent that the fibres will become brittle, and slide over instead of interlocking with each other in case the thread is subjected to a strain. When the cotton under operation is soft and the numbers to be spun from it do not exceed 32's, two processes of drawing, doubling eight ends in each delivery, which is equal to a total of sixty-four doublings, will often be found satisfactory work. When three process drawing is used, six doublings for each process are made, giving a total of 216 doublings in the complete drawing process. Four process drawing is very rarely used, and except when working a long stapled cotton, as Sea Island. If more than a total of 216 doublings is required, either eight doublings are made, on one delivery, with six on the other two, or if desired eight can be made on each delivery, thus giving a total of 512 doublings. From this it will be seen that short stapled cotton does not require as much drawing as long stapled, for the reason that the short fibres are less liable to double up and become as tangled in carding, as in the case with the long fibres. The proper setting of the drawing rolls in the frame for the different lengths of staple is very important, and neglect in this particular will effect seriously the proper running of the machine. The sliver from the last process of drawing should have a silky lustre and the fibres composing it should be perfectly parallel with the length of the sliver produced. The waste which is made in the operation of drawing is very small, and any excess of waste made there can be traced to the negligence of the operator or to a fault in the machine.

In the description of the working of the machine which will be given, only one delivery will be dealt with, as the various deliveries in the frame are all duplications, and what is said of one applies to all deliveries in the machines.

The machines for the first process are placed as near as is convenient to the delivery ends of the cards, or, where combers are used, near their delivery ends, and the cans which are filled from them are placed at the back of drawing frames and six or eight slivers, as the case may be, are passed up through guides at the back of each delivery, passing between a pair of single preventer or tension rolls, and then over the spoons, each sliver passing through a separate spoon, over a guide to prevent the sliver from sagging, to the back pair of the drawing rolls. From the back pair of the drawing rolls the slivers pass, side by side, through three succeeding pairs of drawing rolls respectively.

Between the first pairs of rolls there is a small draft given to the slivers, between the next pair of rolls the draft given to the slivers is slightly increased, the same being considerably further increased between the last pairs of rolls; the total draft between the four pairs of rolls being equal to about six, when doubling six slivers and about eight when eight slivers are doubled, as is the case in some instances. This will give practically the same weight to the sliver from each delivery as that of a card or comber sliver as fed to the machine. On emerging from the front pair of drawing rolls, the drawn slivers are passed to the trumpet in front of the machine and finally condensed into a single sliver, passing in turn downwards between the calender rolls to the coiler head, which coils it into the can. This can, on being filled with sliver from the first process of drawing, is taken to the back of the second process drawing frame, together with other similarly filled cans, and fed to said machine. In the same manner the full cans from the delivery end of the second process drawing frame are placed at the back of the third process drawing frame and in turn fed to this machine. Theoretically one set of drawing frames could be used by passing the sliver through the same machine three times but from a practical standpoint it would not work.

Two methods of positioning the frames for the three processes of drawing are in use, known respectively as "straight" and "crossed" arrangement. The straight arrangement is shown by means of Fig. 1 in a plan view. A, B and C respectively indicate the three frames called for. A refers to the respective cans as placed at the back of each delivery. In the present instance we have shown the cans placed four rows deep, as is customary when using 12-inch cans. In connection with 10-inch cans, they may be set three rows deep in order to make feeding handier. b indicates the coilers in front of each delivery. The arrow D indicates the direction of the passage of the cotton through this three-process system of drawing. In case only two-process drawing is used, frame C is omitted, and in a four-process system an additional frame is added. The crossed arrangement is shown in Fig. 2, the letters of reference being selected to correspond to those in Fig. 1 in order to more readily explain the difference between the two arrangements, the frames being set end to end, front-

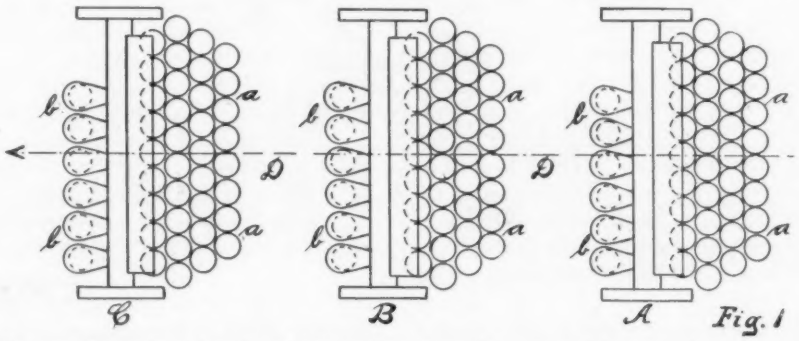


Fig. 1

ing first one side and then the other. This method of setting drawing frames is also known as the "zig-zag" setting, and is used in smaller mills, where the space available is of the right shape.

Referring again to the general construction of a drawing frame, we find that the guides, at the back of each delivery through which the slivers pass in their travel to the drawing rolls, are made with upright fingers having spaces between them in which each sliver moves the object for it being to keep the slivers separated from each other, and thus guided into their correct position (prevent their crossing each other) with reference to the spoons.

When a sliver breaks at the back of the machine, the end from the can should always be spliced if possible with the end hanging behind the rolls, but very often it happens that the stop motion does not act until the end has passed between the rolls, and when

the sliver has to be started in the best manner possible. In order to prevent this trouble, i. e., to have the machine stop before the depending end passes between the rolls, a pair of single preventer rolls are placed at the back of the machine, between the guides and the spoons, a slight draft being present between the back pair of drawing rolls and this pair of preventer rolls, so as to keep the slivers in a slight even tension in their passage to the drawing rolls, which tension otherwise would be more or less irregular. When a sliver breaks on a frame using this roll the breakage occurs in most all cases behind this pair of preventer rolls, so that immediately when the end of the sliver passes through the preventer rolls, the spoons act to stop the machine, ample length of sliver for piecing thus being left. Tension on the slivers also has the advantage of causing the stop motion to act more quickly and also prevent the latter from acting by preventing a slack sliver which would pass over the spoon and cause it to drop in the same manner as if the sliver were broken.

The slivers, on passing through the four pairs of drawing rolls, are, as mentioned before, subjected to an increasing draft between each successive pair of rolls. The reason for making use of this system of drafts is a very important one. A number of carded or combed slivers are fed at the back of each delivery at the same time, or, as is sometimes said, the slivers are doubled at the back of each delivery, and on reaching the drawing rollers, they consequently form a thick strand of cotton. By subjecting the slivers at this point to an excessive draft, it would have a tendency to injure the fibres. But by having the first draft small and the second slightly larger, the fibres under operation are gradually pulled into an approximately parallel order. The slivers have then been subjected to a draft of a little over 2, and the consequent attenuation of the slivers has been very gradual, thus not injuring the fibres, but putting them in such a condition that they can readily be subjected to the increased draft between the second and front rolls.

The drawn slivers on emerging from the drawing rolls in the form of a thin sheet are passed through a trumpet, this trumpet being secured to a pivoted arm, which is a part of the front stop motion on the machine. When cotton is absent in the trumpet, the stop motion acts to stop the machine, since if there was no stop motion the sheet of cotton, after breaking down in its passage to the trumpet, would pile up in front of the rolls, or in some cases would wind around the rolls, and thus cause a waste of cotton, as well as loss in time in cleaning the matted cotton from the rolls. The object of the calender rolls, through which the condensed sliver passes from the trumpet, is to draw the sliver through the trumpet and deliver it to the coiler head and also to further compress the sliver so as to give it more strength.

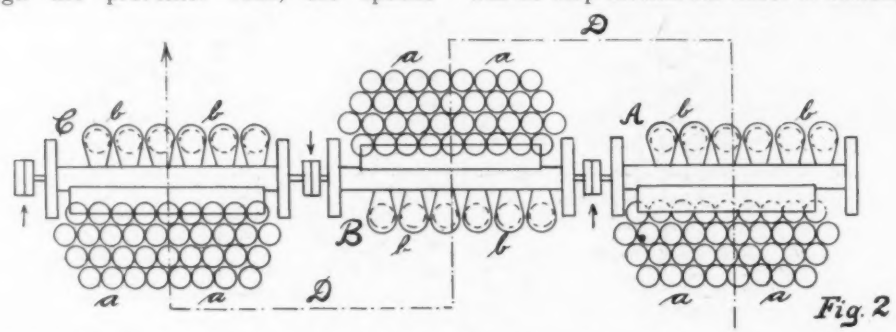


Fig. 2

The coiler can is placed on a slowly revolving stand in order that the next circle of delivered sliver is not deposited bodily upon the one delivered before it. The can thus revolving very slowly and in the opposite direction to that of the coiler tube, lays in this manner the circles of sliver side by side in the can until the same is filled.

The relation of gearing between coiler and can table must be such as to obtain the most regular and compact condition for the coils, so that on withdrawing the sliver from the

can, in the after process, broken ends as well as strained portions to the sliver will be avoided. On account of the sliver being delivered down the coiler tube, and through the coiler rotating, the latter describes a circle, and as the sliver on the can follows the same path, the sliver will consequently be twisted once for each coil, or about once in every 20 to 25 inches, according to the size of coiler used, for example, take a coiler as is used for a 12-inch can. The diameter of the coiler in this instance is 7 13/16 inches. Thus $7\ 13/16 \times 3.1416 = 24.54$ inches, amount of sliver delivered in one revolution of the coiler, i. e., one turn of twist in every 24 1/2 inches of sliver.

The centre of the can is not directly under the centre of the top of the coiler tube, since if this was the case the coils would be laid in a circle, a little larger than half the diameter of the can, around the centre of the can, and not touch the edges, producing in this manner a coiling which would collapse and become entangled. To prevent such a trouble, the centre of the can bottom for a 10-inch can is moved forward 1 1/2 inches from the centre of the top of the tube, and that for a 12-inch can about 2 inches.

Single and double are terms used in connection with drawing, indicating by the first a light sliver caused by one or more ends having been left out at the feeding end of the frame. If, for example, 6 ends up at the frame for one delivery produce a standard sliver delivered, then if one end is left out from any cause, the product made during that period would be called single. Double is the reverse of the preceding and is made where an extra end from any cause is fed to the frame.

STOP MOTIONS.

Probably more time has been expended on improvements in the different stop motions on the drawing frame than any other mechanism connected with it, the results obtained always tending towards simplicity and positive working of the motions. There are at the present time four stop motions used in connection with a drawing frame, each controlling the sliver at different points in its passage through the machine.

The first stop motion of the machine, which controls the feeding of the slivers to the drawing rolls, is situated at the rear of the machine, and is known as the back stop motion. The value of this stop motion cannot be overestimated as the evenness of the delivered sliver is almost entirely dependent on it, because of the fact that six slivers are doubled at the back of the drawing rolls in order to reduce the irregularity in each sliver by incorporating them into one sliver, and it will be readily seen that if one of these six slivers is absent for a short space of time, the resulting sliver will be one-sixth lighter than it should be and hence this irregularity would be worse than irregularity in the carded or combed sliver, and when consequently one of the main objects of the process, i. e., to produce an even sliver would be lost.

The second stop motion met with in the machine is the front stop motion, the object of which is to stop the machine in case the film of cotton breaks between the front rolls and the trumpet, and thus prevent waste and the liability of the cotton lapping around the front rolls.

A full can stop motion is also provided at the front of the machine, the object of which is to automatically stop the frame when a can has become sufficiently full, so as to prevent any damage to the sliver or the machine. In connection with a special type of full can stop motion, a stop motion is used to prevent the sliver from accumulating between the calender rolls and the coiler when it breaks at that point or its passage through the coiler is impaired.

All of the stop motions are more or less connected to each other, and some of the parts are therefore common to all. Both mechanical and electrical arrangements are made for operating the motions.

(To be continued.)

In making cloth from asbestos or salamander's wool, the lumps of fibre are first soaked for a long time in water and the filaments separated from the earth which binds them together by repeated washings. The threads are then moistened with oil, mixed with a small quantity of cotton and spun and woven in the usual manner, after which the cloth is burnt to destroy the cotton and oil.

CORRESPONDENCE AND NOTES

Upon Textile Topics at Home and Abroad.

STEAMING WOOLEN YARN.

BY ELMO.

It is too often the case that the steaming of yarn in woolen mills is looked upon as one of the unimportant features of the work, and not a few evils result from the careless way in which the work is done. The old saying that "What is worth doing at all is worth doing well" cannot be more applicable than to this work.

It is understood that the purpose of steaming the yarn is to destroy the tendency to kink, which results in imperfect work in the dressing and weaving. Not only is the construction and setting of the steam box sometimes at fault, but the manner in which the work is done is equally wrong. Even with the steaming apparatus in the best condition, a careless, don't-care method of doing the work will surely result in imperfect work. Too often the work is done by cheap help who fail to understand, or who do not care for the results, and not infrequently does the fault rest with the overseer in charge, for failing to instruct properly the one who does the work impressing upon him its importance and insisting upon its being done right.

The best work the writer ever saw done in this line was by a man of mature judgment who realized its importance and guarded against everything that could tend to bad results. The wages paid may have been more than would have been required for a boy but I venture to say that the difference was saved many times over, as the mill had 85 broad looms, and to have the work well done was no small consideration.

Uniformity of work and an avoidance of getting the yarn wet during the process are the principal features to be kept in mind by the one who has it in charge. To know just how long to allow the yarn to be steamed is of importance, as a matter of economy, as anything in excess of what is actually required is a waste of steam and of no benefit to the yarn.

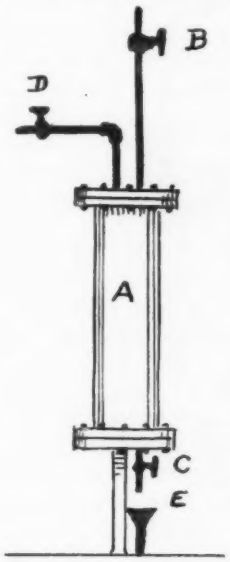
A careful study as to the minimum amount of steam required to do the work properly can soon determine just how long to allow the steam to remain on and result in both uniformity and economy.

One of the most serious troubles is allowing the yarn to get wet by the exhaust being forced upon it. Very often this is the fault of the construction of the box and its steam connections, but more frequently of the operative who does the work, by not properly drawing off the exhaust beforehand, or by turning on such a force of steam as to drive the water upon the yarn, when a little care and moderation might avoid it. Many steam boxes are so arranged that by a moderate force of steam the water will run off, while an opening of the valve to excess means the forcing of the exhaust, with the steam, directly upon the yarn. A check put upon the valve so as to avoid an excessive force may be an advantage, especially where the operative lacks judgment in the matter.

Even where the best possible arrangements exist there is always danger if not accompanied by proper care and yet the location and construction of the box and pipe connections may be greatly at fault. The box should be located as near the boiler as possible, and if far away, should have a direct line of pipe from the main line near the boiler, so as to have as little exhaust as possible to contend with. The attachment for drawing the exhaust from other branches of pipe is constantly working at a disadvantage, and if such be the case, it will be next to impossible to avoid trouble from the water that must pass through the box. When, by improper steaming, a part of the filling has become wet, it tends to cause uneven weaving, and

not infrequently a change of shades. If the yarn be a mixture of light and dark shades, the lighter are likely to be stained, and this more readily occurs where there is a combination of wool and cotton or silk. The intense heat of the steam and the subsequent drying of the yarn tend to set the colors that have run so that the trouble cannot be corrected. By the use of good live steam, entirely free from condensation, there can hardly be any trouble, and anything that can be done to bring this about is certainly worth considering.

The accompanying illustration will give an idea of a very simple steam connection, which



can be made in most any mill machine shop, and will prove valuable, especially where, as is often the case, the steam box has to be located some distance from the boiler.

A represents a steam drum made from an ordinary short-length of four or six-inch cast iron pipe, say 20 to 24 inches in length, with a head fitted at each end. At the top are two connections and at the bottom one.

B represents a valve and pipe by which the steam may be let into the drum. C is an outlet for the exhaust, being disconnected at E so as to make it possible to observe when the water has been fully discharged from the drum. When ready for use, the valve, D, which leads to the steam box, should be closed and C left wide open while B is opened sufficiently to allow all the exhaust to pass into the drum. As soon as nothing but clear steam appears at E, indicating that the accumulation of exhaust is all disposed of, the valve, C, should be very nearly closed, being left open just enough to discharge what little condensation there may be coming along with the steam. When this is done, open the valve, D, and let the steam enter the steam box.

It will be seen that by this method all the water first passes out through the drum, not being allowed to enter the steam box at all, and as the condensation that comes along with the steam goes out at the bottom of the drum, and the steam is drawn from the top, where there is no water, nothing enters the box but good, live steam. Of course care will still be necessary to avoid turning on steam with a force to drive the water to the top of the drum and so force it into the steam box. By proper care the water and steam will separate in the drum, and good results follow.

It is very often the case, especially in cold weather, that when the box is not in continuous use, there is a large accumulation of exhaust in the pipes. By following this plan none of it need go into the steam box, and by keeping an eye on the outlet at E there need be no waste of steam, for it will be plainly evident when the water is all discharged and the steam is in condition to use.

This arrangement does not do away wholly with the need of care and watchfulness, but it renders it possible to avoid having the water on the yarn by passing it away in another direction.

The total value of the wool and wool goods exported from the United States in 1904 was $1,992,393. The imports of this class of goods for the same period were valued at $45,487,129.

In a "Treatise on Wool and Cattel," published in 1677, the price of superfine Spanish wool was quoted at 4 shillings per pound, and "other sorts at 3s. and 3s. 6d. per pound, according as it is in goodness."

FLAT SELVAGES.

BY ARTHUR DYSON.

I have noticed that some of your correspondents have been troubled with curly selvages and would call attention to several American methods which are entirely satisfactory for making a good flat selvage, four of which are as follows:

1. To make a 1-1 selvage, a small gear is placed on the bottom shaft on the inside of side of loom. Running from the sides, across the loom, is a thin rod with another gear fastened to it by means of a set screw, and on this rod at each end is a pair of tappets or cams. Fig. 1.

Fig. 1.

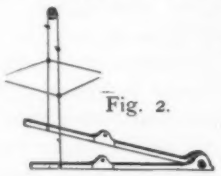


Fig. 2.

Fig. 3.

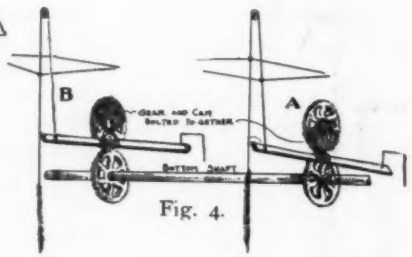


Fig. 4.

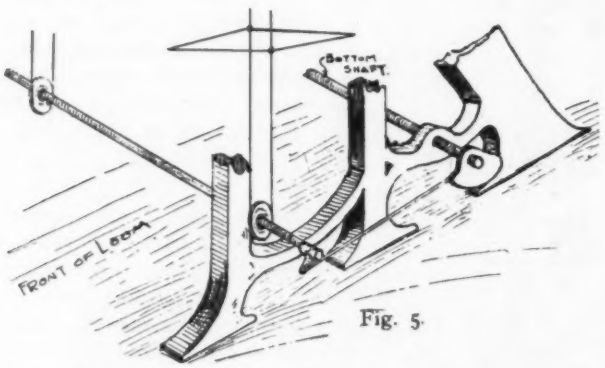


Fig. 5.

One set of cams is arranged opposite to the other, thus changing when the shuttle has just passed through the shed, and before its return. A pair of treadles are placed in the loom girth and from these are passed straps to the selvage harnesses, and a strap is attached to the top of the selvage harness and over a small pulley attached to the loom arch, and then connected with the other harnesses. Fig. 2.

The only change necessary to run a 2-2 selvage is to have the gears in proportion of 2 to 1 in the number of teeth used.

2. This motion is similar, but very much simpler, inasmuch as the rod under the loom is dispensed with and only one treadle is used on each side; the method is as follows:—

Instead of one gear on the bottom shaft and one on the rod, there is a gear on each side of the loom on the bottom shaft, and connected to the side of the loom is another gear with a cam attached, Fig. 3. This cam depresses a treadle similar to that used on the other device, but the opposite selvage harness is attached to a strap and spring from the floor, so that when the cam depresses the treadle, the other harness is raised and the spring stretched, Fig. 4a. On the reverse motion, the spring pulls the harness down again, Fig. 4b. Of course, these cams are very easily adjusted, and are th-

simplest mechanism for a selvage motion. Fig. 4.

Another mechanism is arranged to do away with the treadles and gears, and in place of these a cam is attached to the outer end of the bottom shaft by means of a set screw fastened in the end of the shaft. A casting with two lugs attached, one at each end of a groove, is so adjusted that it moves freely in a horizontal line, but cannot be raised or depressed; this casting is fastened to an angle iron bolted on a thin rod going across the loom, and on this rod are attached two rolls. A strap is bolted on each of these rolls and to this strap is attached the selvage harness, the top strap going over a small roll similar to the other devices. As the cam revolves with the shaft, it oscillates the small rod, and thus the shed is formed, Fig. 5.

A fourth motion is used on the Crompton & Knowles looms whereby either a single or double pick selvage may be made. A cam is fastened on the shaft having an eccentric groove in its side in which is placed a two-pointed piece of iron connected to the harness treadle. The groove is so arranged that it makes an upward and downward sweep of the treadle and thus forms the shed. The only change necessary to make a two-pick shed is to put the projection into a second groove which is so arranged that the shaft makes two revolutions before the cam changes the treadle and reverses the selvage shed. This motion is the best contrivance for general use as it is simple and inexpensive.

WEAVE ROOM PRODUCTION.

BY HENRY D. MARTIN.

A great deal has been written upon the effect of bad yarn on the production of a weave room, and we shall exclude that phase of the subject from this paper, assuming that the yarn, warps and filling are all right, that the mill is running under average conditions, but that the production is considerably below par. Such a case requires close study. Good yarn and plenty of help are not all the requisites of success; there should be better management in the weaving department. In the office there is nothing that arouses suspicion sooner, nor is any deficiency felt more keenly than a drop in the production of the weave room. The cloth is the life of the plant. A shortage proves that something is wrong.

Every item of production on the cloth board should be looked over. A record should be kept so that not only the work of each hand, but the work of each loom can be traced. All looms showing a full percentage of production are crossed off the list, and for those showing a shortage a special record should be kept. See if these looms are up to speed. It frequently happens that a belt is slipping at the loom, or a counter belt may be slipping. Sometimes loss in production is caused by a pulley being slightly over or under size. Locate individual deficiencies in the hands. Sometimes a few poor weavers replaced or shown how to do their work will increase production quite materially. Good weavers sometimes get indifferent, with the result that the production is lowered. These need to be toned up. Loom fixers, too, play an important part in the production of a weave room. Indifference on their part may cause serious loss.

In checking up the production of a weave room it is best to put the responsibility into four groups: First, the product of each loom; second, the product of each weaver; third, the product of a section as cared for by a fixer; fourth, the supervisors in each weave room. In this way every person will feel a personal responsibility in the production. It is a good plan to post the names of the weavers that excel, giving their percentages and holding up their record as a model. Do the same thing in regard to the loom fixers and their sections. It places merit at a premium. Record breakers could also be substantially rewarded by an extra allowance per week. This is also an incentive to keep up the record. Other elements which affect the production are the air, light, temperature and humidity.

Manila hemp can be distinguished from sisal hemp by the color of the ash; that from Manila hemp is a grayish black, whereas sisal leaves a white ash.

DRAWING-OFF DEVICE FOR GILL BOXES AND COMBERS.

Jules Devallee, Roubaix, France, has invented a device to take the place of drawing-off rolls of worsted gill boxes and combing machines. From his description of the apparatus we make the following extract:

There is a pronounced tendency to use shorter materials in the manufacture of worsted yarn and to reduce the waste as much as possible. In striving for this object the quality of the yarn must be considered, especially as regards uniformity and smoothness. With the usual form of drawing rolls on gill boxes, the shorter fibres on the stock are not long enough to reach from the pin to the drawing-off rolls, and being left free during a certain portion of the passage from the pins to the rolls they collect in bunches and cause twitty roving and yarn. To reduce this difficulty the drawing rolls have been made as small as possible in order to shorten the distance between the pins and the rolls. This remedy is limited owing to the necessity of preserving the strength and rigidity of the rolls. In the Devallee machine a set of traveling clamps is substituted for the drawing rolls. These clamps are brought close to the fallers so that the short fibres are seized by the clamps before they leave the pins. These traveling clamps are divided into an upper and a lower set and are operated in the manner of ordinary fallers. They can be applied to either single or double gill boxes.

Fig. 1 shows a longitudinal section of the clamps with a part of the fallers at the left. Fig. 2 is a plan of the same. Figs. 3, 4 and 5 show an elevation, plan and front view respectively of the apparatus for operating and closing the traveling clamps. Fig. 6 is a cross section of two clamps in contact. The contact edges of the clamps are corrugated to hold the fibres firmly. The clamp bars are bent as shown at Fig. 2, so as to bring them close to the fallers. The clamps are moved by screws, the screw for the working clamps being finer than the other, which is used to carry the clamps to working position. The raising and lowering of the clamp bars are effected by the cams, S R, and L M. A pair of clamps hold the fibre until the succeeding pair have also gripped the stock. As the

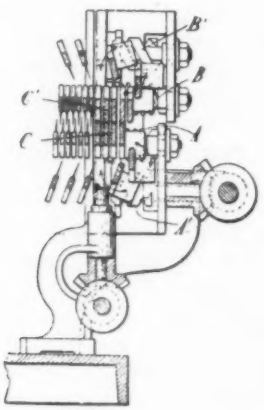


Fig. 1.

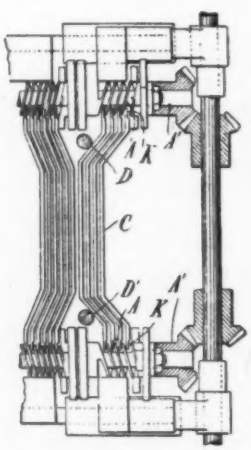


Fig. 2.

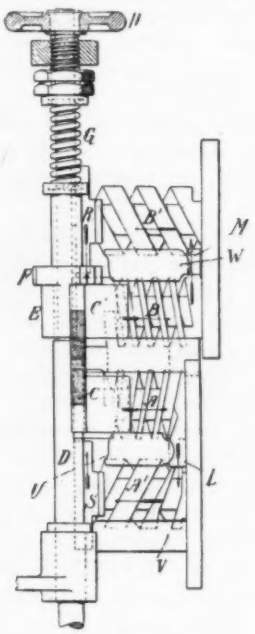


Fig. 3.

weight of the clamp is not sufficient the necessary pressure is supplied by a spring, G, Fig. 3, which can be regulated by a hand-wheel, H. By suitable connections the pressure is brought to bear on the upper clamps.

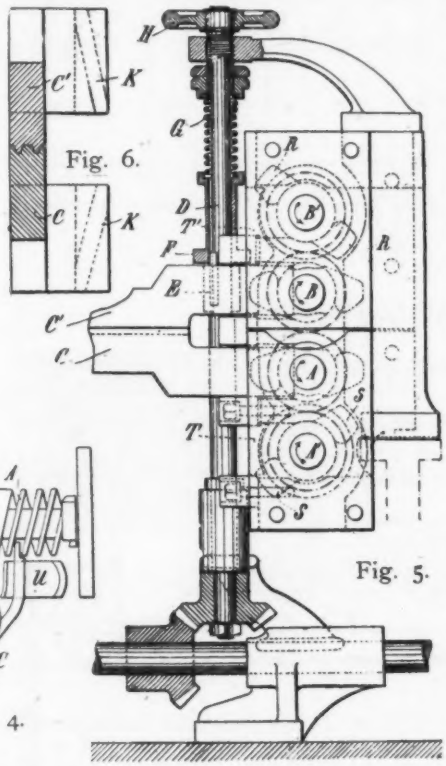


Fig. 6.

Fig. 5.

Fig. 4.

Weights may be substituted for springs and in either case the fibre is subjected to a yielding pressure.—(Translated by the Textile World Record from Leipziger Monatschrift fuer Textil-Industrie.)

It is supposed that the cotton industry was established in Lancashire by the refugees from the Spanish Netherlands in the latter half of the 16th century.

Baudekin was a very rich silk woven with gold and now called brocade. The name is said to be derived from Badgad in Mesopotamia, once famous for its manufactures and dyes. It was introduced into England in the thirteenth century and was used by the royalty for articles of clothing. It is now called cloth of gold.

A NEW COTTON SPINNING MILL.

Figs. 1 to 9 show the plans of a cotton spinning mill of 35,000 spindles recently built in North Bohemia, and which is considered a model mill of the European type. The building has fire-proof cement roof and floors. Figs. 3, 4 and 5 are ground plans showing that the building is divided into two sections by the belt way. Running backward and joined to the main building is the engine house, Fig. 2, next to which is the boiler room. In the basement story, which extends under the entire building, are an office, store room, wardrobes, wash rooms, waste cleaning room, repair shop and dust chamber. Adjoining the machine shop and separated from it by the belt way is a carpenter shop with a store room for packing cases. The plan of the lower floor is omitted from the illustrations.

Fig. 3 is a plan of the first floor. This floor accommodates the entire preparatory machinery. In the space at the left, which is accessible by the door, A, the stairway, B, and the passage way, H, are two large rooms, the mixing room, C, and the picker room, D. The bales, which are taken from an isolated store house, are raised by an elevator to the bale breaker, a, in the mixing room, C. From the bale breaker the cotton is carried upward by a lattice apron, b, near to the ceiling, and then horizontally to the transverse aprons by which it is placed in any part of the room desired. The cotton is left in the bale for several days in order to allow opportunity for the fibres to separate and get into the condition in which they were before baling, also to give time for the cotton to dry in case it is damp when coming from the bale. The room is kept at a uniform temperature between 65 and 75 deg. F., somewhat warmer than is the picker room.

In room, C, are eight mixing trunks so arranged as to give the air free access to the cotton from all sides. The horizontal apron carries the cotton to the picker, e, from which it is carried through a short pipe to the opener, f. Between the lattice and the horizontal opener is an automatic feed regulator. The lap is then taken to the single beater, g, by which it is doubled four times and then

formed into another lap. The laps are then carried by small trucks to the preparing room, E, and then to the cards by which it is carded once for coarse yarn, and twice for fine yarn. There are 80 top flat cards in this room, the sliver being drawn and doubled on ten drawing frames, i, and finally on the coarse and intermediate flyers, k and i'. For warp yarn the finer material is doubled six times and drawn four times, while for filling yarn the stock is doubled six times and drawn only three times.

Fig. 1.

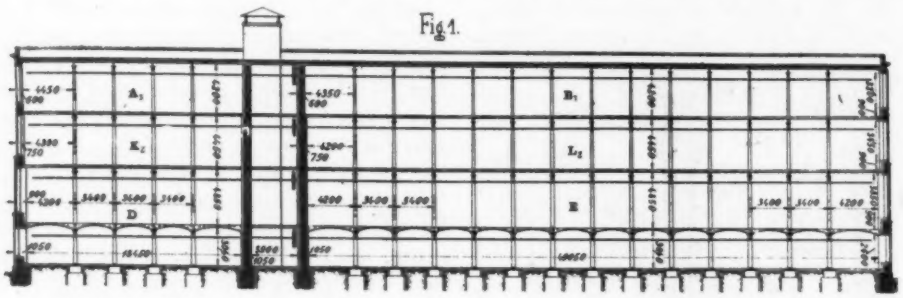


Fig. 2.

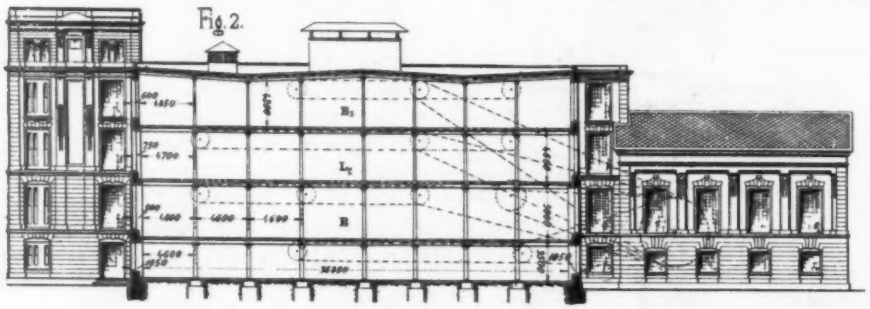


Fig. 3

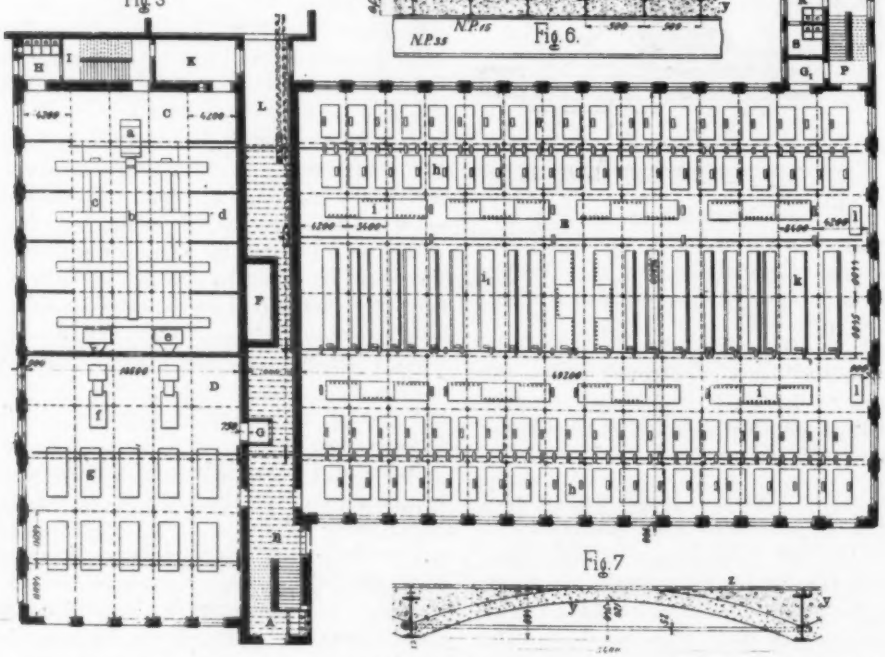
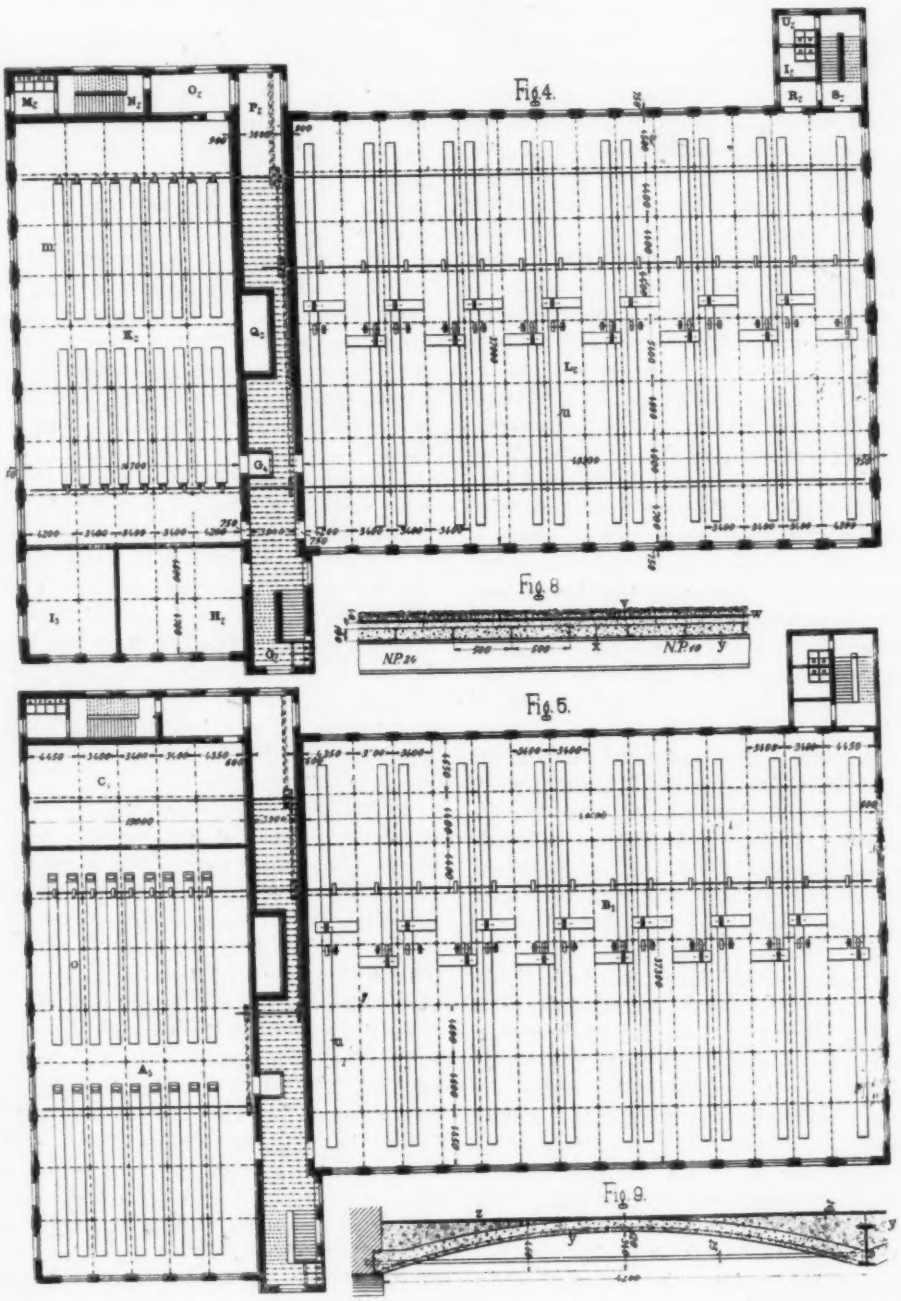


Fig. 6.

Fig. 7

The cards are divided into two sets of 40 each and the cans stand in front of the drawing frames. In the centre of the group of flyers are placed two drawing frames to which the card cans are carried. The drawing frames are near the intermediate flyers so that the work is done without much handling.



The spools from the intermediate flyers are placed on trucks and carried to the elevator, G, in the belt way, which, as far as possible,

is provided with floors at each story. The elevator carries the spools to the next story, the plan of which is shown at Fig. 4, where in the room, K^2, are 18 fine frames, each having 172 spindles, making a total of 3,096 fine flyer spindles. The roving from these machines is spun on mules and ring frames. Soft warp and filling yarn is spun on mules in the rooms L^2, B^3, on the second and third floors. The hard warp yarn is spun on the ring frames in the room, A^3, on the third floor.

The spinning machinery consists of seven mules, a, of 960 spindles, 1 5/16-inch gauge and 14 ring frames, o, of 172 spindles each, 2 1/4-inch gauge. The equipment is for a daily production of 9,500 pounds, 16 to 36 warp and 6 to 24 filling yarn. The arrangement of the machinery is especially designed to prevent the mixing of the warp and filling stock.

An examination of the sectional plan of this mill shows that every part of this space is used to excellent advantage. The space between the posts averages 15 feet by 11 feet. These posts are of cast iron and support the iron frame work which carries the cement The ceilings are of the following heights: Cellar, 11.4 feet; first floor, 16.4 feet; second story, 15 feet; third story, 15.4 feet.

Figs. 6, 7 and 9 show enlarged plans of the floors which are built on the Monier system. The floor construction, Fig. 6, consists of a main beam, 25, in which smaller cross I-beams, 15, are placed at intervals of 20 inches. The space between these beams is filled with cement to a height of 7 1/2 inches, which brings the cement 1 1/2 inches above the cross beams. A final layer 1/2 inch thick, either of cement, xylolith or eubolith, z, is then laid on this cement and forms the top of the floor. The weight of such a floor is about 85 pounds per square foot.

Another cement floor construction is shown at Fig. 7. The main beams are stiffened by the rods, 25, and a space of 11 feet between the beams is spanned by a cement arch. This arch rises about 13 inches and thus comes above the upper level of the main beams. Cement, y', is filled in above the arch and again above this is placed a coating of cement z, which forms the top of the floor. The weight of this floor is about 100 pounds per square foot. The spread of the arch is neutralized by the cross bolts.

The third floor construction, Fig. 9, consists of a Monier arch similar to the one just described. The arches span the spaces (13.7 feet) between the main beams and rise about 14 or 15 inches. The iron frame work is embedded in the cement. Preference is now given to shorter spans as they form a more solid and a cheaper construction.

Fig. 8 shows a cross section of the roof, which consists of the main beams, 24, and the cross beams, 10. The space between the cross beams is filled with cement. Above this is a layer of insulating material, x; next comes several layers of wood cement, w; last is a regular layer of gravel, 2 1/2 to 3 inches thick.

The main stairway, B, is placed in the belt way; outside are two stair ways, S^2 and N^2. Under the stairways are the toilet rooms, M^2, I^2, U^2, etc. In this belt way is the dust tower, G, which rises above the buildings, Figs. 1, 2, 3, 4. This brings it near the picker and waste cleaning rooms. The first floor has an office, K, for the superintendent and another office, O^2, for the overseer. On the second floor are two rooms, I^3 and H^2, used for storage of supplies. On the third floor the room, C^5, is used for roll covering.

The power house, shown at Fig. 2, is built to accommodate a double cylinder high pressure engine. The engine has a stroke of 42 inches, makes 80 revolutions per minute and generates 1,000 horse power. Steam at a pressure of 180 lbs. is supplied by two boilers. The mill is lighted by electricity. Fig. 2 shows the method of transmitting the power from the engine to the various rooms in the mill. The ropes run from the fly wheel of the engine to the pulleys on the shafts in the various rooms. The cards are driven with open belts; the drawing frames, flyers and ring frames with half turn belts. Estimating the cost at $12.00 per spindle and the working capital at $9.60 per spindle, the total capital would be $759,456. (Translated by the Textile World Record from Uhland's Technische Rundschau.)

ENGLISH NOTES.

(By our Special Correspondent.)

Makers of cotton warp mixtures have been hampered on both sides and are looking anxiously for stability to be reached in the price of cotton. Through all happenings makers of carpets are standing together and are doing reasonably well. No doubt those with the easiest minds and fullest order books are the low woolen men in nearly all grades. The greatest sufferers are Bradford worsted spinners and their grievances have led again to desultory suggestions of limiting production to steady the market. It remains still to be seen whether the spinners will combine and whether their efforts can produce the desired results.

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Events help on the growing solidarity among English cotton spinners. In major matters they can be depended on now to act as a whole and to enlist the co-operation of the continentals. For this internationalism the aggressions of American operators in raw cotton are responsible. For the purely English combinations the demands of operatives were primarily accountable. But combination is being turned to defeat the pretensions of Liverpool cotton brokers and merchants who have entrenched themselves snugly inside the trade. Indignation has been made to blaze by the Liverpool effort to fine spinners in sums of thousands of dollars for contravening regulations made for the security of the brokers' monopoly. Not unnaturally, spinners feel that the reinforcement of the middleman's grip is no business of theirs and they are now advised to reject the good offices of the Liverpool Arbitration Committee and to insist on the personal right to refuse country damaged cotton, of which a great deal is known to be on the way. Echoes of these disturbances will no doubt reach the South and perhaps events will favor the effort of Southern growers and shippers to get into direct touch with the man in the Lancashire mill.

* * * * *

Some advice of a certain R. S. Anderson, who is interested in selling American linens, silks and satins in China, seems calculated to mislead American manufacturers. British papers, of course, demur to the suggestion that American makes are "infinitely superior" to those shipped from Manchester. But the chief chance of error lies in supposing these to be really considerable items in the China market. If "miscellaneous pieces" (excluding cotton, woolen and unions) were all of these descriptions, the items would form between one-eighty-fifth and one-one-hundred-and-seventieth of the imports. Cottons worth $80,000,000 are bought, and pure or mixed woolens worth $2,500,000, and these are the lines that Britain is in the East chiefly to sell. When American mill men go out to China they may perhaps be reminded that emissaries of our two combines, the Bradford Dyers' and Calico Printers' Associations, have been on the spot.

* * * * *

Trade in cottons with South Africa improves. Outside the demand for gaudy striped blankets—printed usually in Holland and given a velvety finish—the trade is similar to that in England. Indeed, supplies are largely drawn from the regular home trade stocks and at the end of the seasons merchants count on considerable bulk purchases for that market. Woolens going there are of lower classes than formerly, and the degradation of quality is most apparent in the quantities of suits ready-to-wear that are shipped. A revival is noted in the demand—long dormant—for colored rugs.

* * * * *

The "greening" of canvas is a line which some are finding profitable. The cupro-ammonium sulphate process is followed, and cloths so treated are used extensively for rick and cart-covers in this country and for tents and other purposes in the tropics. Buyers are in the habit of testing the canvas for its proportion of copper, which is the element relied on to prevent rot and resist the white ant. The most successful method is covered by a patent of the Willesden Company. A current of air is introduced into the bath and so much of the cotton is converted into cellulose that the canvas becomes draught and waterproof also and acquires a shiny surface. In following the older process, special drying arrange-

ments are to be desired, as large blotches of uneven color and even patches of brown result from leaving the cloth folded in its wet state.

* * * * *

In Saxony 10,000 dyers' men are striking for $3.60 per week, 10 hours a day, having declined a penny a day increase offered, which made wages $3.36. Some 40,000 other workers about Glauchau, Gera, Greiz and elsewhere have employment jeopardized. Bad as it may be to have only the maximum mentioned, it is said to be true that numbers of men have drawn only $1.70 or so per week for long periods together. Dyers' men in England are not well paid and within recent times were almost as badly off as Saxons. Large numbers of them still must draw no more than $4 to $4.50 on the average.

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Silk noil effects are not to be depended on for a much longer run, but it is always advisable to utilize these noils, if possible, during the long spaces of time in which their price is declining. A useful combination with either dark or light ground has been employed by a Guiseley firm. Two threads of woolen alternate either way with two of silk and woolen twist, the warp twist being much the coarser. A broken broad stripe is thus obtained, which is over-checked in white or color. The silk is relied on to give strength to the grandrelle and pulled material with a low percentage of cotton suffices for the plain yarn. In the piece the effect is one of great smartness and at 26 cents 42 inches is reckoned cheap.

* * * * *

Two-fold worsted yarn of strong wool, plain and black color, in conjunction, is woven into costume cloths by Messrs. Denby & Co., of Shipley. The price is 37 cents, 44 inches, the colorings gray and the designs include types of most forms of checking. Worsted tweeds of the sort have been a successful experiment in the hands of various Bradford firms with fast looms and large capacity for production; some of whom leave a proportion of soap and oil behind to soften the handle of the wool used.

* * * * *

Broken check effects in light colors and light weights are the dress goods that have been bought for the ensuing spring. The same theme runs through goods of all compositions and constructions, and among fancies there will be little else shown for popular consumption. Checks are in danger of being overdone as much now as were stripes before them, and notwithstanding the presence of plaids, shepherd's checks and the like, it would seem that we are gravitating towards mixtures of no prominent character.

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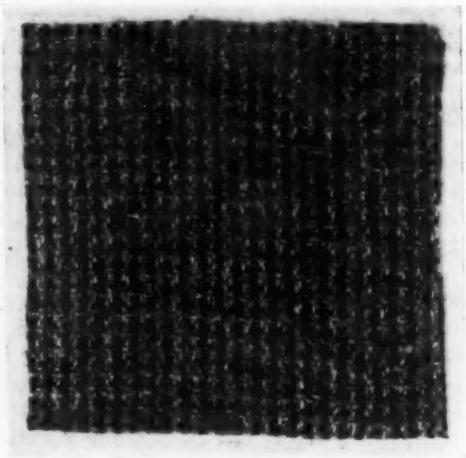
Blue serges and vicunas for men gain in popularity with all but the wholesale clothier. The passion of their customers here, as in Australia and Canada, is for showy brown



and olive-toned tweeds. It is this line, broadly speaking, which keeps our woolen manufacturers busy. They thrive while worsted-spinning Bradford languishes. Browns also show conspicuously in fine goods, and even Japanese contracts, which are coming across in instalments, are for army serges in khaki.

* * * * *

St. Gall firms have been delivering in this market beautifully colored crepes de laine from fine single worsted yarn. Embroidered and all complete, the price is 21 1/2 cents in 27 inches. The gossamer is of surprising strength and drapes so handsomely that it can hardly fail to outlive by long the voiles that have had such a vogue. The manufacture is assuredly not everybody's business and in this country it might be impossible to com-

pete with the Swiss. With tariff assistance, Americans have a special opportunity to cultivate the production of such dainties.

PUT LIFE INTO YOUR WORK.

A young man's interest and duty both require that he should make himself indispensable to his employers. He should be so industrious, prompt and careful that his temporary absence will be noticed at once. A young man should make his employer his friend by doing faithfully and accurately all that is required of him. It is a great mistake to be overnice and fastidious about work. Pitch in willingly. Your willingness will be appreciated, while the high toned young man who quibbles about what is and what is not his work, will get the cold shoulder.

There is a story that George Washington once helped to roll a log that one of his corporals wouldn't touch. That's just what you want to do. Roll the logs along. Be energetic. Move with alacrity. Take an interest in your employer's success. Work as though the business was your own and let your employer know that he may place absolute reliance on your word and work. Keep your mind on your business, because it is that which is going to help you, not those outside attractions which some of the boys are thinking about. Take pleasure in your work. Don't go about it in a listless, halfhearted manner, but cheerfully and remember that while working in this way for others, you are laying the foundation for your own success in life.

A successful business man said there were two things he learned when he was eighteen which were afterward of great use to him, namely, never to lose anything and never to forget anything. I once had an intelligent young man in my employ who deemed it sufficient excuse for neglecting any important task to say, "I forgot." I told him that would not do. If he was sufficiently interested he would be careful to remember. It was because he did not care enough that he forgot. I drilled this truth into him and afterward he never forgot a thing. He found his forgetting was a careless habit of the mind and he cured it.

This advice comes from one who has had three score years' experience in mill work. It is the wisdom born of experience and is offered to the young women as well as to the young men of today for their own good.

OLD SUPERINTENDENT.

LONG AND SHORT BOBBINS.

Editor Textile World Record:

While reading the article on long and short bobbins in your July issue, my attention was particularly attracted to the broad claims made for the long bobbin by No. 31. He claims that both the weaver and the manufacturer have been benefited, as the manufacturer has reduced the cost of weaving 32 cents on 100 yards.

Before the change the weavers were running two looms with a 7-inch bobbin, carrying 425 yards of yarn, warp yarn, 10s. Wages were $5.00 per week, and they were weaving 275 yards per loom per week, or 550 yards for the two looms. This is equal to 90.9 cents per 100 yards.

Under the new system the weavers are running four looms with an 8½-inch bobbin with 2/20s warp, and the pay has been reduced to 53 cents per 100 yards. This makes a difference of 37.9 cents per 100 yards in the cost of weaving, but from this must be subtracted the extra cost of spinning, as it costs more to spin 2/20s than 10s, besides it will require more spindles to keep up with the looms. If we add in the market values of single 10s and 2/20s to the cost of weaving, where is the gain?

No. 31 also claims that the weavers are averaging from $9.50 to $11.00 per week at 53 cents per 100 yards. The weaver must weave 2,075 yards per week, or 513 yards per loom per week. Under this system the weavers are running double the number of looms and the production per loom has nearly doubled. Isn't this a broad statement?

A. FITTER.

Power looms were not used at all in the woolen industry until after 1839.

In 1850 there were 67 silk mills in the United States; in 1900 there were 483.

CLOTH CARBONIZING MACHINE.

Most carbonizing machines are open to the objection that the strength and durability of the cloth are easily injured. While such injury can be avoided to a large extent by careful attention to the running of the machine, yet any improvements which reduce the liability to injury will be welcomed by the trade. A machine embodying such improved construction is built by Wagner & Hamburger, Goerlitz, Germany, and has been in use in German mills for nearly a year. Like nearly all carbonizing machines it has two chambers through which the cloth is carried back and forth over guide rolls. Instead of heating the air by pipes or other radiators placed inside the machine, such heating apparatus is enclosed in a separate chamber outside the carbonizing machine.

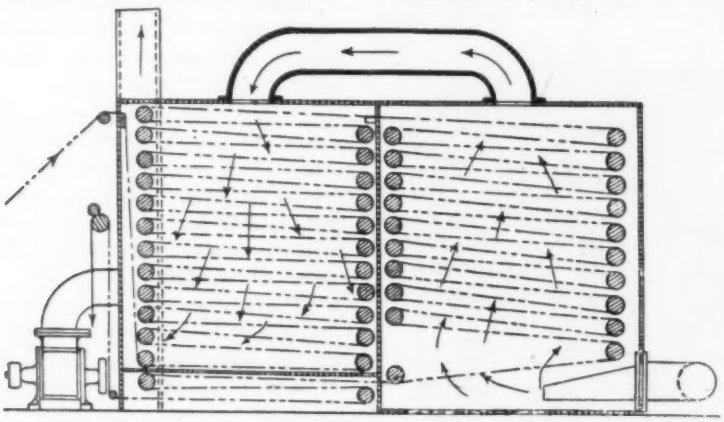


FIG. I.

The air pressure is regulated by suitable valves. The air is forced uniformly through all parts of the cloth as shown at Fig. 1. It has been found that this method is much superior to the ordinary way of forcing the air into the chamber without providing means for forcing it though the cloth itself.

The strength and structure of the fibre are greatly improved by the new process as compared with the old method of carbonizing. Because of the thorough impregnation of the cloth by the hot air the most firmly felted fabric is carbonized in a short time and without the severe treatment that is ordinarily required. The yellow spots and harsh feel found in goods carbonized in the old style machine where the intense heat from the radiators comes in contact with a certain portion of the goods are entirely avoided. Change of shade, which often occurs when the goods have been dyed with sulfocyanine, is prevented. The influence of hot air on the acid is much more intense than with the old style machine, because in the new machine the air is forced through the goods and thus comes in contact with every fibre. It is therefore not necessary to subject the goods to such prolonged treatment in order to get a complete carbonization of the vegetable matter.

Likewise the machine can be made much smaller thus saving floor space. After being carbonized in two chambers the goods are passed through the third chamber and subjected to the action of cold air. The operation of the machine is thus described by Fritze & Co., carbonizers at Goerlitz, and who have used one of the machines continuously for eight months:

"We carbonize about 2600 meters of 24-ounce goods per day with machines 18 feet long. In spite of the large production the goods are delivered in much better condition than with any other machine we have been able to find. Very heavy goods weighing 60 ounces per yard are thoroughly carbonized with the machine and the natural feel is unimpaired. My customers prefer stock carbonized on this machine." (Translated by the Textile World Record from Oesterreich's Woolen und Leinen Industrie.)

THE CANADIAN WOOLEN INDUSTRY.

Topeka, Kansas, Aug. 17, 1905.

Editor Textile World Record:

I notice in English notes of your June number your special correspondent states that incredulity is prevalent in England as to the genuineness of Canadian woolen manufacturers' woes. He says:

"A number of our woolen men know Canada, and have inspected Canadian plants. Nothing flattering is said of the condition or capacity of some of these, and it is argued with instances quoted in point, that where skill is linked with good machinery, woolen manufacture is really rather prosperous in the Dominion. But woolen people say that a man who cannot succeed under circumstances existing in Canada could certainly not succeed on this side of the ocean. They agree generally in thinking that Canada needs aptitude and learning rather than high protection in order to make money."

Now as one who has lived in Great Britain for twenty-five years, and worked in woolen factories on that side, and also for years has had an intimate knowledge of every woolen mill of any consequence in the Dominion of Canada, I wish to say that the statements made by your English correspondent have no foundation in fact.

The writer would be very glad to know the "instances quoted in point," where "woolen manufacture is really rather prosperous in the Dominion." With regard to equipments, the writer can state positively, as a practical man and as one who knows whereof he speaks, that every mill of any consequence in Canada will compare most favorably with those in Britain, being for the most part equipped with up-to-date American machinery, whereas, in conservative Britain many factories are still operating machinery which any Canadian or American manufacturer would have consigned to the scrap pile years ago.

An Englishman who has not been "up against" the conditions which obtain in Canada, is not in a position to say whether a Canadian manufacturer could or could not make a success on the other side of the pond. Without going into minute details let us consider a few of the differences in cost of operating a mill between the two countries. In Britain laboring men can be had in almost any, if not every, locality for 18 shillings per week, which is equivalent to about $4.50. In Canada, on the other hand, where the American scale of wages prevails, the rates for unskilled labor runs from $6.00 to $9.00 per week, and $12.00 per week and upwards for skilled labor. The writer has known within his experience of foremen in the card room, boss carders in the old country whose wages were 35 shillings per week, equivalent to about $7.00 Canadian money. The same man in Canada would cost from $24.00 to $30.00 per week, according to the number of sets. Again money can be borrowed in Britain for 3 per cent. interest, in Canada it costs 6 to 7 per cent. Fuel is correspondingly cheaper in Britain than in Canada.

It is not necessary to enlarge upon the subject. Enough has been written to give an idea under what disadvantages the Canadian manufacturer labors in comparison to his British cousin, and it is the same all along the line.

The writer does not wish to contend that the Canadian born manufacturer has intimate knowledge of all the little quirks of the trade, which the British manufacturer has acquired in centuries of constant application to the business, and which is handed down from generation to generation, but may say that in nearly every case Canadian mills have British managers, superintendents and designers in charge.

In conclusion, as long as Canada continues to have their country made a dumping ground for England's cheaply manufactured goods, we shall see no improvement in the condition of the Canadian industry. The United States experienced the same condition prior to the days of the Dingley tariff. In fact the Dingley tariff is the result of the conditions just mentioned. Just as soon as Canada wakes up and puts on a similar tariff she will experience a similar prosperity. Then we may also expect to hear a louder squeal from the Englishmen.

CHAS. M. HEDDLE.

India ranks next to the United States as a cotton producing country, so far as quantity is concerned, but in quality its product is in the lowest class, due to careless cultivation and poor ginning with unfavorable climatic conditions.

POINTS ON CARDING.

BY SAM DRIVER.

(Concluded from August.)

RANDOM ROPING.

Random roping can be made with a creel on the finisher in conjunction with vibrating doffers. Everything must be adjusted just right, both doffers must be positive in their action and care must be taken to have the rings occupy their required space and position; then the rings will take up the required quantity of stock from each stripe. Every other drawing-in creel and guide is of a different color, say, red alternating with green, etc. The roping will have at certain intervals a clouded appearance and then grow less cloudy, approaching almost a clear color, and then gradually reverse until the opposite color predominates.

CARDING KNICKERBOCKERS.

To make nubs for knickerbockers select short, fine wool and run it through the picker dry and then through a first breaker as follows: Feed on very light; set off the workers from the cylinder 3/16 of an inch; set the strippers just close enough to the cylinders to clear them; set the doffer with a 28-gauge. Do not run the comb; set the fancy just to touch the cylinder, start the card and the nubs will drop under the card. For nubs larger or smaller set the cards accordingly.

These nubs are then taken to the fulling room and fulled until quite hard, then dried and they are ready for mixing. When the batch is ready for the cards set off the workers of the first breaker from 1/8 to 3/16 of an inch; let the strippers remain as they were, but set the workers off the strippers slightly; set the doffers as for regular work and the fancy the same.

Set the second breaker the same as the first, except that the worker next the fancy is set quite close to the cylinder. This is to regulate the size of the nubs required; set the fancy the same as on ordinary stock. Set the finisher the same as the first and second breaker with the exception of the first and last workers. These can be set closer to the cylinder to regulate the size of the nubs. The best way to get the workers on both sides alike is to notice the number of turns on the nut before setting.

UNEVEN ROPING.

When using creels on the second breaker never have a full set in at one time; have partly filled spools on one-half of the creel and full spools on the other half; the roping will be more even in this way. When all the spools run out together there are so many splicings that they cause the roping to be heavy for a time. The more spools there are in the creels the more doubling and the more even roping. One drawing out makes the roping finer. Among the causes of uneven roping are imperfect cleaning and mixing of the stock, irregularity in putting on oil and composition, inaccurate weighing and feeding, feed rolls and other cylinders winding stock and filling up after stripping, strained drawings from second breaker to Apperly feed, belts and gears slipping, and inferior card room help. Perfection in the form of all cylinders from the largest to the smallest is essential in making even roping.

If the ring doffer is out of true so that it comes nearer to the cylinder during one part of its revolution there will be a gradual variation in the roping from coarse to fine and the increase and decrease will alternate in lengths equal to the circumference of the ring. If the main cylinder is out of true so that one side runs nearer to the doffer than the other, the variations in size of roping will be repeated in lengths equal to the circumference of the cylinder. Uneven roping may also be caused by the workers, leader-in, tumbler and fancy being out of true.

These imperfections may not always be apparent to the naked eye and are not very easily detected. There is no doubt that these small things are the cause of uneven roping and of uneven yarn, besides an endless amount of trouble. The remedy is simple and consists in truing the small cylinder as well as the large one and keeping them true no matter how hard the cards may be driven. Quality first and then quantity is the best rule for both carder and manufacturer.

The feed rolls should be of the same size and perfectly true; if one is larger than the other they will not deliver evenly and this

will be more or less perceptible in the yarn according to the difference in size between them. Another very frequent cause of uneven roping is the careless manner in which the pulleys are lagged with leather, making them untrue or lopsided, causing the belt to run slack or tight, thus driving them at unequal speeds and producing results similar to those from uneven surfaces.

A dull tumbler will cause uneven strands on the ends of the spools. Uneven feeds make uneven roping. Another cause is defective setting of the ring doffers. If the fancy on the finisher is set too hard or runs too fast or the card runs too long without stripping or if the cylinder is dull, fine strands will be made on the ends of spools and heavy strands in the middle. The first full spools made after stripping the cylinder should be torn up. Crowding the stock in the first breaker feed and then letting it run nearly out is the cause of much uneven roping. The small pulleys of the Apperly feed should be cleaned and oiled every week. When weighing roping weigh the tops and bottoms, then the sides and the middle. The tops and bottoms should be spun separately. If making warp and filling from the same lot, the tops will make the strongest warp. To ensure even roping, the feed rolls, leader-in and tumbler should be faultless. If they are allowed to get filled with stock the best results will not be obtained.

STREAKS IN WOOLEN GOODS.

The causes of creases and streaks in woolens and half woolens are very numerous, and it is often difficult or impossible to remedy them. The following remarks are therefore chiefly directed to means for preventing their occurrence.

Warp streaks, due to unequal tension in the warp threads, are very common and are especially troublesome in weaves where the warp comes much to the surface. The streaks can be felt as well as seen if the fabric is stretched and the fingers are passed over it in the direction of the weft. Raising accentuates the streaky appearance as the tighter places are more raised

Milling is a frequent cause of streaks and creases, and the danger is greatest when the goods are treated in rope form. Scouring, carbonizing and neutralizing are also responsible for much of the trouble. In the washing machine, when the goods are scoured and neutralized, the upper roller must not be too heavy. The machine should not be called upon to deal with an excessive amount of goods at a time. If this rule is not observed the goods have no room during their sojourn in the machine to change their folding, but remain creased, as they were put in. The creases are thus made more lasting, and the goods go to the milling with them, and there the same creases are still further impressed into the fabric. Frequent passage of the creases between the cylinders and under high pressure naturally makes the creases permanent, especially at the high temperature of the fulling mill. Consider the case of a piece of paper, folded, and having the fold forcibly run over with the thumbnail. We all know that the crease produced is ineradicable.

Many attempts have been made to design fulling machines with arrangements for changing the folding of the goods as they pass through, but although a certain degree of success has been achieved, the fuller must not rely too much upon them. The goods must be frequently stretched during the process, and the motion of the cylinders must be occasionally reversed. The best machine of the improved sort has cylinders in the form of truncated cones. It is claimed that in passing between these rollers the folding of the goods is constantly being changed, so that no place is kept permanently creased.

Special machinery has been invented for removing milling creases. The principle of all methods is the same. The goods are stretched either on a frame or by being tightly wrapped on a roller, and are then wet steamed or treated with boiling water, and dried without relaxation of the tension.

The picking of cotton generally begins in August in the Southwest, and in September in the Southeast. Usually the crop is picked over three times at intervals of about one month. The cost of picking ranges from forty cents to one dollar per pound.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Equipment for a Dyehouse.

Editor Textile World Record:

What would be the average cost of establishing a dye plant for a sweater and cardigan factory, wool, worsted and cotton, for about 5,000 pounds of wool and 3,000 pounds of cotton yarn per week on dark and light colors? The yarn is to be scoured before dyeing. We also want some yarn to be bleached, but we use nothing but skeins. The cotton is to be worked with the wool to make it match the wool in shade. What would be the cost of the necessary machinery and supplies for this kind of a plant? What would be the average salary of a first class dyer to superintend the plant, and how many people, inexperienced, would be needed besides the foreman? If possible specify the machinery needed.

Webster (560).

To dye from 500 to 1,000 pounds skein worsted and cotton yarn per day would not require a very elaborate outfit, and it would not be advisable or necessary to install any dyeing machines such as are used for handling large quantities of yarn in each color. The following list of dyetubs, etc., would be fully adequate to handle 1,000 pounds per day: For wool and worsted, 5 dye tubs, rectangular, each 7 feet long, 3 feet wide, 3 1/2 feet deep; this allows separate tubs to be used for black, brown, light colors, scouring and bleaching.

For cotton skein yarn, 3 tubs rectangular, each 8 1/2 feet long, 2 1/2 feet wide, 2 1/3 feet deep, giving separate tubs for light colors, dark colors and bleaching.

One hydro-extractor, 36 inches to 40 inches.

For the drying of the yarn a dry room 16 feet by 8 feet is provided with the necessary poles 7 1/2 feet long, made from 3 in. by 2 in. stock. On these poles the yarn is suspended while drying.

Webster says the cotton and wool are to be worked together in order to get uniformity of color. I presume he refers to bleaching, as this practice would be possible in bleaching with the peroxide of sodium process. If he refers to dyeing the two materials he is very much mistaken, as the cotton and wool would require entirely separate and distinct treatment. Even should he make use of cotton and wool mixed twist, the cotton must be dyed by one class of dyes and the wool by another, though in that case the dyeings would all have to be made in the kettles or tubs designed for wool and worsted skeins, on account of the greater length of the skein.

A summary of the entire outfit with cost of same would be about as follows:

5 tubs at $30	$150.00
3 tubs at $27	81.00
1 hydro-extractor, 36 to 40 in.	350.00
75 drying poles, 7 1/2 ft. long, 2 in. by 3 in. at 25c.	19.25
500 dye sticks, 4 ft. long, 2 in. in dia. at 6c.	30.00
Steam and water pipes, valves, shafting, hangers, etc.	150.00
Sundries	25.00
Total	$800.25

The entire plant would occupy a space about 40 feet by 60 feet.

The dyehouse force would consist of a foreman and five helpers. A competent dyer for such a plant usually receives from $3.00 to $4.00 per day.

Palmetto.

Percentage of Cotton.

Editor Textile World Record:

How can I determine the proportion of cotton and wool in mixed goods? Test (517).

Weigh a sample of the mixed goods and then boil for 20 minutes in a 10 per cent. solution of caustic soda or potash which can be obtained at any drug store. This treatment removes the wool and a small proportion, possibly 5 per cent., of the cotton. Rinse, dry and weigh the cotton residue. Add 5 per cent. to obtain the weight of the cotton. The difference between this and the total weight is the weight of the wool. It is well to enclose the sample in a small sack of cotton cloth while boiling it to prevent any loss of the material.

Specific Gravity and Twaddle.

Editor Textile World Record:

Please give me a rule for determining specific gravity from degrees Twaddle. Eastman (536).

To convert degrees Twaddle to specific gravity: Multiply by 5, add 1000, and divide by 1000.

To convert specific gravity to degrees Twaddle: Multiply by 1000, subtract 1000, and divide by 5.

Ex. Convert 40 deg. T. to specific gravity.

$40 \times 5 = 200.$

$200 + 1000 = 1200.$

$1200 \div 1000 = 1.2$, specific gravity.

Ex. Convert 1.2, specific gravity, to degrees Twaddle.

$1.2 \times 1000 = 1200.$

$1200 - 1000 = 200.$

$200 \div 5 = 40$ deg. Twaddle.

Average Count of Yarn.

Editor Textile World Record:

How is the average count of yarn found in a spinning room on mixed numbers? At this time I am making 22s, 24s, 26s, and 30s: about 1,000 spindles on 22s, 1,000 on 24s, 1,600 on 26s, 8,000 on 30s. What is the average number?

Norwood (577)

The average count of yarn of different sizes is the average number of hanks per pound and this cannot be calculated from the spindles and counts. If the length of the yarn spun in a mill were in proportion to the number of spindles irrespective of the size of yarn, a rule could be given for calculating the average count from the different counts and the number of spindles on each, but this is never the case. The length spun depends on the speed of the rolls, which varies widely with different counts, and in fact for the same count. Again, the production of the different sizes is affected by breakdowns, doffing and other things which are never uniform on all machines in a room. Owing to these varying factors the average count of a spinning mill's production varies constantly. The only way it can be calculated is from the different counts and the quantity of each (expressed either by length or weight) produced in any given time. The following example illustrates the method:

Ex. A spinning mill produced 12,000 pounds of yarn in one day: 4,000 pounds 10s, 6,000 pounds 30s, 2,000 pounds 40s. Find average count for that day.

4,000 pounds 10s = 40,000 hanks
6,000 pounds 30s = 180,000 hanks
2,000 pounds 40s = 80,000 hanks

12,000 pounds 300,000 hanks

300,000 (hanks) ÷ 12,000 (pounds) = 25, average count or hanks per pound.

If the product is given in hanks instead of pounds, the operation is as follows:

40,000 hanks 10s = 4,000 pounds
180,000 hanks 30s = 6,000 pounds
80,000 hanks 40s = 2,000 pounds

300,000 hanks 12,000 pounds

300,000 (hanks) ÷ 12,000 (pounds) = 25, average count or hanks per pound:

This method is correct for any fixed weight method of yarn numbering such as cotton, worsted, run or linen system.

A Patent Doup Heddle.

Editor Textile World Record:

Some time ago we heard of a doup heddle that was worked by a cam and would like the address of the firm making it, as we desire to give it a trial. Can you give me this information?

Sumner (583).

Can any of our readers answer this question?

Poison in Textiles.

Editor Textile World Record:

I would like some information regarding the use of lead and arsenic in dyestuffs used in coloring textiles. Putnam (546.)

An answer to this question appears in the dyeing department of this issue.

Care of Garnett Machines.

Editor Textile World Record:

I would like to see an article in the Textile World Record on taking care and running garnett machines. Lockhart (578.)

The garnett machine is used to card and open out hard or soft twisted yarn waste. Knots and cops pulled from the bobbin should be cut before being fed to the machine. The waste should be sorted and such foreign matters as broom corn, sticks, nails, leather, etc., taken out. Garnett machines are not made to work up such things. The garnett machine is very delicate and expensive and the wire requires great care, while repairs are very costly.

The material should be fed on evenly and not very heavy; a specially adapted Bramwell feed is the best. A garnett machine will do just so much work and do it well, and no more. Dirty or dusty waste should be run through a duster: the cleaner the stock the longer the machines will run without stripping.

Good judgment must be used in setting the machine in order to obtain the best results and it must be set to suit the particular quality and class of stock to be manipulated. In other respects it is set like a card. The feed rolls should be set so they will mesh each other if possible. Set the top workers with a graduating gauge—32, 33, 34. The fancy and fancy stripper should be set to the cylinder with a 36 gauge, or as close as possible without striking. Set the doffers with a 34 gauge or as close as possible without striking.

The fancy driving pulleys on cylinder shaft and on the fancy shaft should be covered with leather with the flesh side out and the belt should be put on the fancy pulley and run with the hair side next to the pulley. The fancy should not be allowed to run if it gets filled with stock. Keep it stripped clean. So far as good work is concerned the fancy is the most important part of the garnett machine. If the fancy does not work properly everything else will go wrong. The belts on the fancy must be so tight they cannot slip and the cylinders and doffers must be cleaned before they become glazed over. If these suggestions are carried out there will be no trouble in getting good work from a garnett machine.

Sam Driver

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 232 to 253. Also Buyers' Index.

KNIT GOODS SITUATION.

Reports from manufacturers who are making heavy weight underwear show that they are, almost without exception, running full time, and many of them are considerably behind on their orders at the present time. Selling agents are not soliciting any business and many inquiries made by buyers are referred to the mill, before a date of delivery or a quotation is made. Ladies' ribbed goods are in a strong position and sales are being made of 7 lb. goods at $1.95 and $2.00, that could have been bought in February at $1.75 and $1.80. Some of the Syracuse manufacturers are getting $2.12 1/2 for 8 lb. goods and $1.85 for 7 lb. goods which were sold early at $1.90 and $1.67 1/2.

Robert MacKinnon & Co., who are making a specialty of a ladies' ribbed garment weighing 8 lbs. on size 6 and made from a special yarn that they spin themselves, are quoting same at $2.05. Some manufacturers are not in as good a position in regard to their extra size business and are evidently wanting business for their extra size frames from the fact that the 7 1/2 lb. goods sold early in the season at $2.00 may now be bought at $2.10. No advances are being asked on the ladies' ribbed fleeced goods, made by the Utica Knitting Co. and the Regal Textile Co., but both these concerns have plenty of orders and state that they cannot accept any duplicates for delivery before October 15 to November 1. In fact, this might be said to be true of all manufacturers of ladies' ribbed goods and even at the advanced prices mentioned, they will only accept orders for delivery from about October 15 to November 1.

The situation is not as strong in men's fleeced goods and a careful inquiry among manufacturers reveals a peculiar condition of affairs. One of the best known manufacturers of standard weight fleeces is offering his merchandise at $3.25 for full weight goods and is apparently anxious for business, while other manufactures of the same class of goods are getting $3.50 and one of them (probably the largest) claims that he has orders enough to run till December. It is said that there is not much money for the manufacturer in men's fleeces at $3.25 when cotton is worth 7 1/2 cents per pound and the fact that this manufacturer is still open for business at the old price indicates that he must not only be master of every detail in manufacturing, but that he has purchased cotton and yarns more freely than others, when prices were low.

The Union Knitting Co. are getting $3.90 for their fancy trimmed shirt and $3.60 for the wool fleeced goods, made in the harder branch. Flat wool goods are scarce and manufacturers are asking advances of from 50 cents to $1.00 per dozen and buyers are being informed that they must anticipate their wants several weeks ahead. So far, very little complaint has been heard regarding qualities of goods delivered. This is perhaps due, in a measure, to the fact that buyers are posted on conditions and know something of the difficulties that the manufacturers have to contend with on the present rising market, and are, therefore, not so critical as when the conditions are not so strong. We have heard complaints regarding ladies' ribbed goods weighing 6 and 7 pounds, but we find upon investigation that the customers have received just the weight goods that they have bought, but that the cause for complaint is in the sizes, and this is due to the fact that in order to make a garment in these lighter weights with yarn heavy enough to stand a fleecing, the fabric draws down to a very narrow width in being knit. Jobbers are just now starting out to solicit spring business and first reports show that retailers are ready to buy and are placing liberal orders freely. While it is yet too

early to give much of an idea of what the trade will be, the indications point to a demand for better goods hereafter, and it is noticeable that the cheap, showy trimmed garments are not so much sought after as those of better fabrics and plainer trimmings. We represent in this issue a vest made by Julius Hirsch Knitting Co., of Philadelphia, with a fancy yoke. These are sold by the retailer for 25 cents and the representative of this concern states that it has been a big seller.

Considerable interest is being shown in the infringement suit now being brought by

the Chalmers Knitting Co. against the Frederick Conde Co., on account of their making a garment similar to the "Porosknit" on which a patent was granted to Martin Shaughnessy, superintendent of the Chalmers Co. Fabrics of this kind have been made in France and Germany for several years in large variety of patterns on the Terrot, a circular spring needle machine of French manufacture. It is an elastic fabric and in the judgment of the writer, has a very promising field, considerable criticism having been made on the mesh goods which so far have been made quite inelastic.

Some few manufacturers have already begun to turn their attention to lines for next fall, and while samples have been made up, the prices have not as yet been put on them and it will be necessary soon for them tc begin to "speculate" for 1906. One manufacturer characterizes it as a "Wall street gamble" and it certainly does not look to the writer as if manufacturing knit underwear is in any sense a bed of roses.

HOSIERY.

Duplicates on fall lines have been placed freely during the past month with some manufacturers, who are in shape to take additional business. A number of buyers who were in the market have also added quite materially to their spring purchases at slightly advanced prices. The market is well conditioned and deliveries of fall goods are behind and a real scarcity exists in some grades of children's and ladies' cashmere goods.

Indications point to a considerably increased demand for white cotton goods and lisle hose for ladies and children, and Chemnitz manufacturers are sold up to the limit of their capacity on many white numbers. Russets promise to be in good demand another season and there is also a limited call for pastel shades to match various colors of dress fabrics. The indications are that lace goods will be as good and better than ever and the lighter and sheerer the fabric, the more popular the number on both boot and all-over patterns. The better grades of embroidered goods are in good demand, but the cheap numbers are not being taken as well. Some interesting novelties are being shown in half hose, one an overplaid with dainty figures worked up in deep shades of blue, also a black lisle with silk heels and toes, are among the better sellers.

Light gauze tan lisle with silk embroidery in navy blue with white figure fronts are also taken well. Black gauze lisle are being shown with garter top and these have the advantage of holding the sock up well and appeal to many, especially those who wear half length underwear.

Pure vicuna wool comes from South America, and is very rarely found in commerce. It is soft and delicate, of a reddish-brown color, and resembles alpaca wool.

DESIGNS FOR FANCY KNITTING.

BY F. W. HERINGTON.

These designs for fancy knitting are those known among knitters as tuck presser work on spring needle circular machines. The designs are sketched on same kind of design paper as is used for weave drafts. Fig. 124 shows the knitted design.

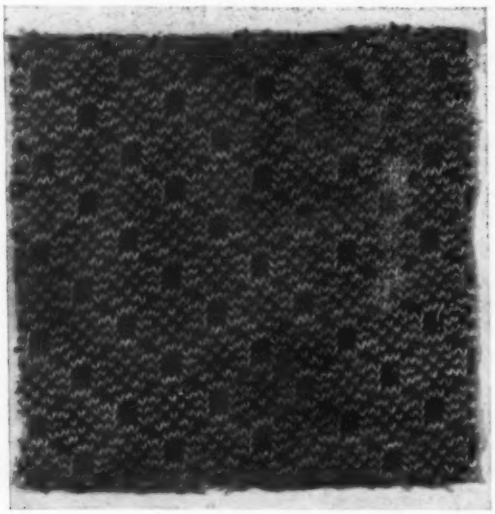


FIG. 124.

The space on the design paper between two horizontal and two vertical lines which represents a square, represents a single plain loop, Fig. 126 C, while a cross (×) on a square of the design paper represents the tuck stitches, Fig. 126 B, where the thread crosses in a straight line at the back of one, two or more loops, Figs. 126, 1, 3, 5, 7, 9 and 11. Fig. 124 is an illustration of the knitted fabric.

These patterns are usually made with two contrasting colors, as black and white, black and red etc., but in this design a third or fourth color may be used on some of the feeds, as this design is made with 10 feeds on the machine, 5 plain and 5 tuck presser feeds. It can also be made with a single color; the tuck stitches will still show the design although not so prominent.

Having sketched the design on the paper as shown at Fig. 125, we ascertain first, where the pattern repeats. Starting at A Fig. 125, the first square or loop of the design, we find that the pattern repeats at the 13th square to the right also on the 5th squares counting from the top, at the 7th square from the left, also marked A. The pattern therefore consists of 12 loops in width by 5 courses in depth. The design therefore, consists of (12×5) 60 loops.

Every alternate feed or course of loops is made with plain stitches, which enables the tuck stitches to be cast off. In sketching the design Fig. 125, only the courses for the tuck pressers are shown. The whole pattern when knitted will therefore be 12 loops wide and 10 courses deep, as shown at Fig. 126. Having ascertained the number of loops required to produce the design, which in this case is 60, a tuck presser is made with 60 teeth or cuts for each of the 5 courses or loops in depth, taking the section of the pattern Fig. 127 and starting at A, the first presser, Fig. 128, is cut from D to E to correspond with the design, which is then repeated around the presser. The small indentations or cuts, C Fig. 128, represent the plain stitches of the design, and the deep cuts, B, represent the tuck stitches.

Where the deep cuts, B. B., come in contact with the needles, the stitch or loop is

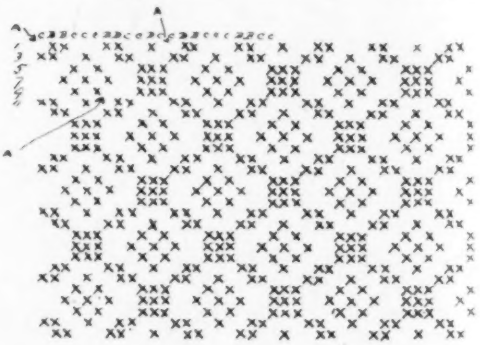


FIG. 125.

not pressed off, but remains on the needles until the succeeding plain presser feed is reached when it is pressed off. The tuck stitch then becomes a straight thread across the previous course of loop or loops.

When the small indentations, C. of the

tuck presser, Fig. 128, come in contact with the beards of the spring needles, it closes them, thus pressing off the loop and making a plain stitch the same as those made by the plain presser on the alternate feeds.

Where the tuck stitches are formed by not pressing off the previous plain loop, but are held until the succeeding plain feed is reached, there results an elongation of those

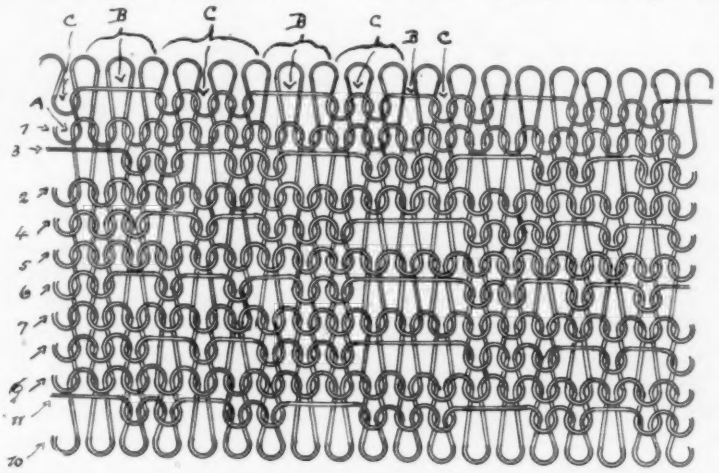


FIG 126

loops that are tucked, as shown at Fig. 126, where the thread crosses the previous loops in a straight line. The previous loops are drawn down to the succeeding course of plain loops.

This tuck thread in crossing the other loops at the back of the fabric makes a loose thread. It is therefore desirable when designing a pattern not to have more than 3 or 4 tuck stitches come together, as the length of the loose thread is otherwise increased at the back.

Taking the design, Fig. 125, and starting at square, A, we find that the first loop, C, is plain; the next two, B B, are tuck; then three C C C, plain; two, B B, tuck; two C C, plain; one, B, tuck; and the last one, C, is plain; making 12 in all. The pattern is then repeated on this line.

On the second course, 3, Fig. 125, the first two loops are tuck; two, plain; one, tuck; two, plain; two, tuck; and the next three, plain.

On the third course, 5, Fig. 125, the first three are plain; one, tuck; one, plain; one tuck; three, plain; and the next three, tuck.

On the fourth course, 7, Fig. 125, the first two are plain; one, tuck; one, plain; one, tuck; one, plain; one, tuck; two, plain; the next three, tuck.

The fifth course, 9, Fig. 125, is the same as the third course, 5.

Now the design shows that after 5 courses are completed by the 5 tuck pressers, Fig. 128, 129, 130, 131, and 132, the pattern repeats at the 7th square or loop from the left of the design, Fig. 125.

This shows that the number of needles in

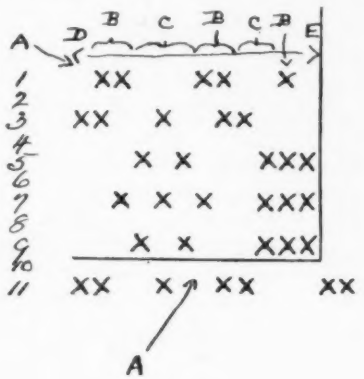


FIG. 127.

the cylinder must be divisible by 60, which is the number of cuts in the tuck pressers, with remainder of 6 needles.

On the second and each succeeding revolution of the machine, the tuck pressers will be thrown to the left or right 6 needles, starting again with the design on the 7th needle.

corresponding to the 7th square of the design.

If this is not done, the squares represented by the 3 courses, 5, 7 and 9, Fig. 127, and

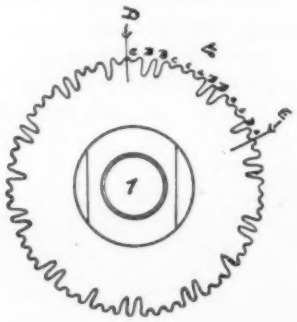


FIG. 128.

Fig. 125, would come directly under each other at each revolution of the machine in-

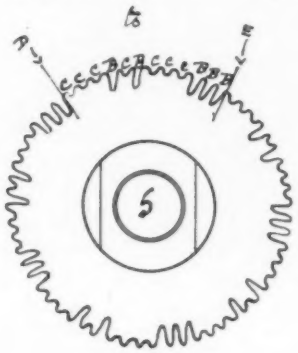


FIG. 130.

stead of at the side. For example, if the number of needles in the cylinder is divisible

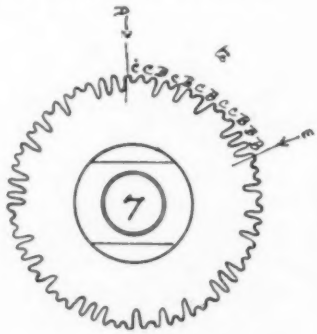


FIG. 131.

by 60 without a remainder, a different pattern would be the result.

Fig. 127 is a section of the design Fig. 125; the letters and figures correspond with each other. Courses, 2, 4, 6, 8, and 10, Fig. 127, represent the courses of the alternate plain loops.

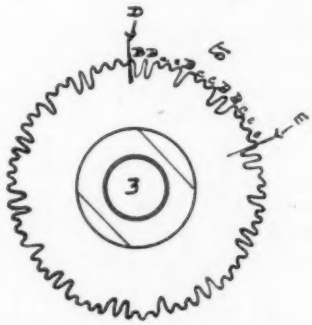


FIG. 129.

Fig. 126 is an enlarged sketch of the loops and is drawn to correspond with the section of the design, Fig. 127, the letters and figures all correspond with each other.

Figs. 128, 129, 130, 131 and 132, are top views of the 5 tuck pressers, showing how each is cut to correspond with the design. The cuts from D to E on each represent the squares of the design, Fig. 127, from D to E, the numbers in the centre correspond to the numbers at left of design Fig. 127. The cuts on each of these tuck pressers are repeated from D to E. In setting these tuck pressers on the machine they must follow each other in succession on the feeds as here marked from 1 to 9. Starting from any one needle on the machine, each tuck presser in rotation at the starting point of the design

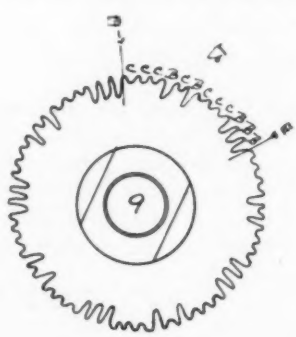
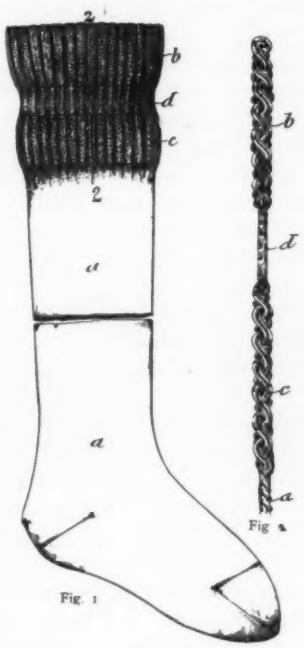


FIG. 132.

at D must be set on the same needle, in order to work in unison to produce the design as shown.

AN IMPROVED STOCKING.

The stocking shown in the accompanying illustration is made with a rib top and an extra reinforced rib below the top. Between the ribbed sections is a space of ordinary knitting, the whole forming a solid top to which



the hose supporter is attached. Fig. 1 is a side elevation, Fig. 2 a vertical section of the new construction along the line, 2 2, Fig. 1. The stocking is provided at its upper end with a top made in reinforced rib-stitch, b, and at a short distance below the same with a second auxiliary band or stripe that is also made of reinforced rib-stitch, c, being separated from the top band by an intermediate portion of ordinary stitch, d. The top as well as the auxiliary stripe of rib-stitch are used for attaching the grips to the hose supporter, so as to keep the stocking in place.

The second auxiliary reinforced stripe is for the purpose of permitting the attachment of the grip at a greater distance from the upper end of the stocking in case the same is too long or in case the hose supporter has lengthened by wear, and gives a better fit when attached to a point below the top of the stocking. By means of the reinforced lower stripe or rib, c, the support of the stocking by the grip of the hose supporter is facilitated and the application of the grip to the band of the stocking below the reinforced top rib, by which the stockings are easily torn, is entirely obviated, as the supporter is attached to the auxiliary rib-band.

The rib-top may be turned inside the stocking or outside, as preferred. The reduced portion serves as an elastic or expansible joint, whereby a bunglesome fold is avoided and a smooth, neat appearance is provided for, besides permitting the bifurcated portions of the suspender to straddle the edge of the stocking when folded down to clasp the reinforced rib-band, thus providing for an adjusted suspender or a long or short stocking, as the case may be.

The reinforced rib-top and the reinforced auxiliary stripe or rib serve to attach the clasp or buckle of the garter and prevent the tearing of the stocking at its upper end, which is objectionable with the boys' and misses' stockings at present in use. This construction has been recently patented in this country.

NON-SHRINKABLE KNIT GOODS.

Editor Textile World Record:

We have noted an inquiry in your August issue with reference to unshrinkable knit goods, which states that "a large percentage of worsted knit goods sold in Canada are imported from England and Germany, and all are labeled 'Guaranteed Non-shrinkable, All Wool.'" The article goes still further and says "that retailers absolutely guarantee this, and if the garment shrinks in washing the manufacturer protects them and will replace it."

We are naturally much interested in the matter, as we are offering the "Nevershrink" process for sale in certain sections of the world. This process, invented by C. Scott Althouse of Reading, Pa., is for the very purpose mentioned in the inquiry referred to.

The "Nevershrink" process is very simple and easily operated. It will render wool and woolen goods absolutely non-shrinkable, and will in no way injure the fabric or render the garments unmerchantable.

We have sold this process in Canada and it is just possible the inquiry in your August issue has to do with goods placed on the market by some manufacturers who have adopted the "Nevershrink" process.

Now, regarding the reference to English and German firms who guarantee "non-shrinkable goods," we want to say that we have imported, at considerable expense, samples of everything sold as non-shrinkable that we could buy. These were all tested at our laboratory, under the personal direction of Mr. Althouse, and with the most varying results. In many cases instructions were given for washing the garments. Some garments had never been put through a process of any kind; some had been treated with very strong chemicals and the fabric was in such a state that, with little washing, the garments were badly damaged.

Naturally few garments are ever returned, from the fact that the public know that shrinking is a natural property of wool; yet they are gradually demanding non-shrinkable goods, owing to advertising. Thus it is fast being realized by some of the leading manufacturers that they must get a process which will render their product absolutely non-shrinkable and not injure the fabric. We have recently installed the "Nevershrink" process in two foreign plants that have been placing non-shrinkable goods on the market for some time. They had all kinds of trouble and about decided not to guarantee their product, when they examined some of our samples and adopted the process. In a recent letter they stated it was the best investment they ever made.

We would be glad to write anyone in detail, giving information, if they will advise us at our Philadelphia office, 1501 Real Estate Trust building, or at our laboratory, Reading, Penn.

C. Scott Althouse.
Per Charles H. Heyer, Manager.

Hemp is practically the only one of the long vegetable fibres used for rope making. The soft hemps are best for the standing rigging of ships, or wherever a heavy purchase is required, while Manila is preferred for light running rigging.

A DIFFICULTY IN KNITTING.

Will you suggest some way of overcoming a difficulty I have encountered with a circular latch needle machine of 13-inch diameter and 36 gauge? The dial does not set squarely above the cylinder and when in operation it wabbles slightly, causing the fabric to be stiffer on one side than on the other. I have tried several kinds of brackets and braces without success. Is there any remedy other than new parts? Black Thorn (581).

It is almost impossible to say what is the trouble without seeing the machine, as it might be due to several causes. The most probable one is that the center stud is slightly bent, or the hole in the dial a little out of true. This defect is rather difficult to overcome, for if the dial is re-bored, a larger stud will be required, and no machinist other than a practical knitting machine builder would be likely to do a successful job of that kind. There is another remedy, however, but it requires considerable skill. In a case like that mentioned the stitch gets tighter by degrees to a certain point and then slackens again. As the stitch is drawn by the cylinder needles downward over the dial needles, it is plain that if the needles are plyered upwards the stitch will be lengthened and the cloth made looser. The dial needles should be bent upwards at a gradually increasing rate from the point where the cloth begins to tighten to the center of the tight place; from the center they are bent upwards in gradually diminishing degrees until the point is reached where the cloth is all right. If this is carefully done, good cloth can be made on a machine that is badly out of true.

Tight places in the cloth may also be caused by badly worn needles, or needles made of finer wire. Another fault with dials is soft places in the iron or steel resulting in some of the needle slots wearing away quicker than others. This will make a tight line and the only remedy is to plyer the needle up till the line disappears. A skilful knitter can do wonders with a pair of pliers on a machine that is worn or out of true, but when the dial begins to give trouble I advise getting a new one. Wabash.

Black Thorn will probably find that his trouble is due to the imperfect setting up of his machine, or to its being sprung out in some way after setting. The trouble can be

located by stripping the dial post and removing the cylinder. After fastening the post in position, place a straight edge across the head and go carefully around the post with a square, using the straight edge to rest the square on. In this way any imperfections in the post can be corrected, as it must set at right angles to the straight edge.

Foreman.

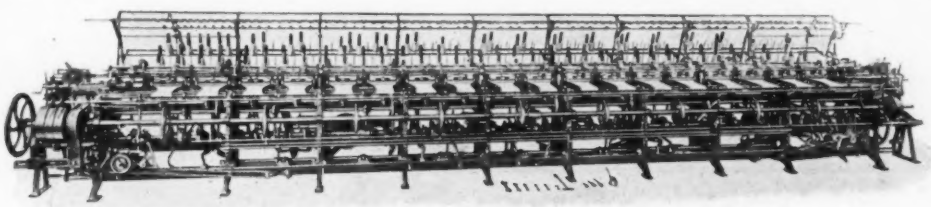
From the wording of the inquiry I infer that the machine belongs to that class of ribbers in which the needle cylinder and dial are stationary while the dial cams and vertical needle cams revolve in their respective holders. There has been some contention about the best way of keeping the dial true in this class of ribbing machinery, in fact, some are being built embodying an adjustable stem, that is to say, the vertical arbor which supports or holds the dial and cam tap is fitted loosely within the spider, and may be adjusted by means of set screws. I do not believe this is necessary if the machine is well built, and it is also my opinion that it would be best for Black Thorn to fix his machine instead of getting new parts, because the trouble may be with the supports that hold the spider. To do this, first see that the holes in the spider are a perfect fit around their studs; if not, they should be bushed. Next see that the vertical shaft is perfectly straight and that the dial does not wabble. The dial, too, must be tested by putting it on a mandrel and revolving it between the centers of a lathe. If out of true it should be trued.

Next, and perhaps most important, is to take the cam ring with its studs and fasten it to the face plate of a lathe in such a manner that it will revolve absolutely true. Then the spider should be firmly fastened in its place and its center hole should, if it runs out of true, be turned out with an inside turning tool, after which a perfectly accurate bushing having a hole which is a nice fit for the dial stem should be driven tightly into the spider. If this work is properly done it will be impossible for the dial to wabble.

Potsdam.

THE HILSCHER FULL FASHIONED HOSIERY MACHINE.

The accompanying illustration shows the latest full fashioned machine built by G. Hilscher, Chemnitz, Germany, and for which Edward W. Koch, 319 Bourse building, Philadelphia, Pa., is the sole American agent. The Hilscher machine shop is one of the leading establishments in Germany for the manufacture of knitting machinery. It was established in 1851, and has been kept up-to-date in every respect. It began operations with the construction of the Cotton knitting frame, and in 1899 finished its five thousandth machine. The Hilscher frame has been continuously improved so as to accommodate a larger number of heads and produce a greater variety of goods. The firm is now building knitting frames for the manufacture of ladies' and children's hose, and men's and children's half hose and underwear in either plain or fancy effects.



A HILSCHER FULL FASHIONED MACHINE.

In addition to the Cotton frame, the Hilscher works have perfected a frame of their own design known as the Cotton-Hilscher high speed knitting frame for manufacturing plain hosiery. This machine knits 60 to 65 rows per minute, which is claimed to be 20 to 25 per cent. above the production of other machines. The company also build an automatic frame by which a full fashioned stocking or half hose is knit complete to the

toe without any extra setting. After the fabric comes from the machine it is necessary only to seam the webbing and link it at the toe. The Hilscher machine knits the heel known as the Deckel-Keil heel, which is claimed to offer important advantages over the ordinary construction. Hilscher frames are also built for manufacturing ribbed tops.

Mr. Koch, the American agent, will be glad to receive inquiries regarding this machine and to show a number of Hilscher frames in operation in Philadelphia.

ELASTICITY IN KNIT GOODS.

A knitting machine for producing a more elastic knit fabric has recently been patented in this country. The inventor states that the improvements comprise the addition to the ordinary knitting-cams of an auxiliary cam-incline arranged to tighten the loops upon the last two opposed sets of needles which successively engage the thread. The needles in the cylinder set first engage the thread, which is then engaged by the needles of the dial set, and the auxiliary cam-incline is located in the cylinder and tightens the loops upon the dial-needles before they are cast off.

The individual needles of the dial set are projected and retracted once for each loop engaged, and the individual needles of the cylinder set are projected and retracted twice for each loop engaged, whereby the tension of the loops upon the respectively opposite sides of the fabric is equalized.

Fig. 1 is a plan of a portion of a two-feed knitting-machine embodying the improvements. Fig. 2 is a view including a plane development of the cam-cylinder and the perimeter of the dial, showing the relative projection and retraction of the individual needles of the opposed sets. Fig. 3 is a sectional view showing the adjustable connection of the auxiliary cam in the cam-cylinder. Fig. 4 is a plane development of a cam-cylinder, showing a modified form of the invention. Fig. 5 shows three successive steps in the shaping of the loops upon the edge of the fabric.

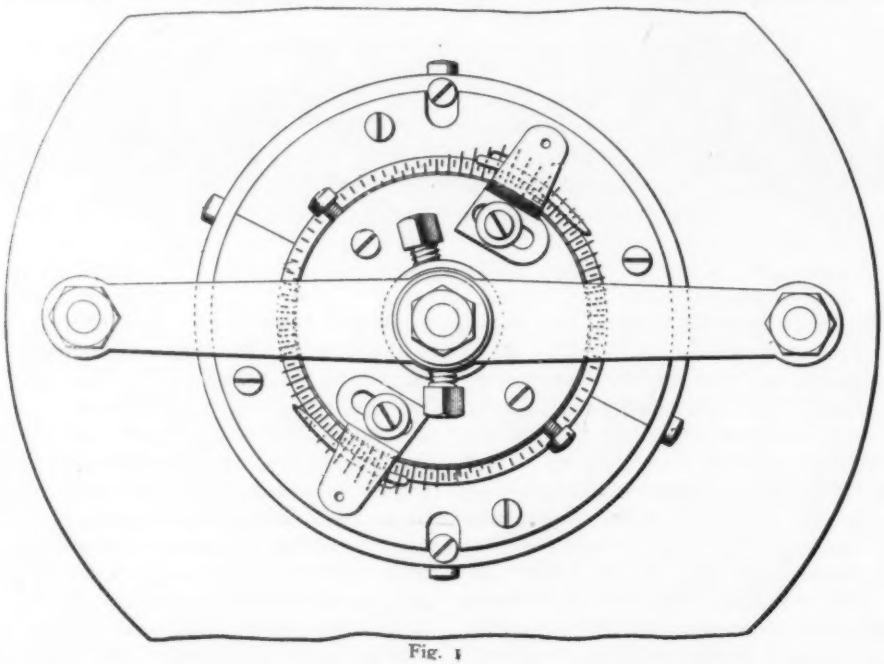


Fig. 1

The yoke projecting from the frame supports a stationary cam-disk and the rotary needle-dial, in which latter are mounted the series of dial-needles. The cam-disk supports the thread feeds or guides, which may be of any desired number, each comprising a vertical member provided with an aperture,

through which the thread is delivered to both sets of needles. The guides are stationary with respect to the needle-cams, and the location of the apertures with respect to the needles in the cylinder set is shown in Fig. 2.

The knitting-cams which actuate the two sets of needles may be of any desired construction.

The cylinder-needles are progressed with respect to the cam-cylinder in the direction indicated by the arrow shown in Fig. 2 and carry with them the dial-needles. Fig. 2 is intended to show the relative circumferential

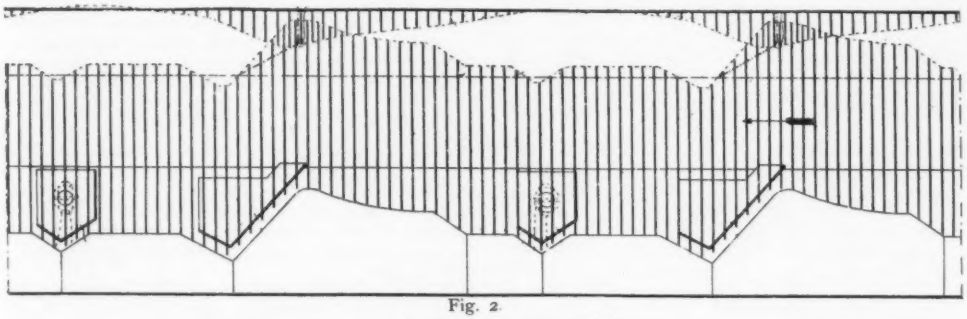


Fig. 2.

Fig 3.

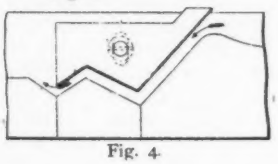


Fig. 4.

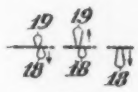


Fig 5.

positions of the regions of projection and retraction of the respective sets of needles and also the relation of the individual needles to the top edge of the needle-cylinder and the outer edge of the dial, which edges serve to cast off the loops from the respective sets of needles. The vertical overlapping of the two sets of needles is not significant. It is to be noted, although both sets of needles receive the thread from a common guide-aperture, the cylinder-needles are retracted to form loops, 18, before the dial-needles are retracted to form loops, 19. Likewise the needles cast off their old loops at the top of the cylinder before the needles cast off their old loops at the edge of the dial.

The finest jute is grown on the high ground in the north and east districts of Bengal. The middle qualities come from the river banks, deltas, etc., known as "Salilands."

New Agency for the Bach Knitting Machines.

Just as this issue was going to press we received advices that Wilh. Bach of Germany, had appointed Max Guenther his sole representative for the United States and Canada for the sale of the well-known line of Bach knitting machinery, both hand and power. These machines produce a full line of sweaters, blouses, gloves, mittens, jerseys, and a general line of knit goods, plain and fancy. The headquarters of the American agency will be at 531 Twelfth Ave., Newark, N. J. After October first there will be placed on exhibition a line of machines in practical operation, and an invitation is sent to knit goods manufacturers to call and inspect them. In our next issue we expect to illustrate this line of knitting machinery and to have some interesting articles from time to time on the machines and their products. We refer to the two-page advertisement of the Bach machinery which appears in this issue on pages 222 and 223.

Amozeen is a heavy silk, almost invariably black and largely used in making clergyman's gowns.

The number of cotton spindles in operation in 1904 is estimated at 47,500,000 in Great Britain; 34,600,000 on the Continent; 24,850,000 in the United States, and 5,043,000 in India, a total of 111,993,000, and an increase of 2,686,000 over the number in operation in 1903.

Sizes of Union Suits.

Editor Textile World Record:

What are the standard sizes of men's, women's and children's union suits? Payson (580.)

We learn that several leading lines of men's and children's union suits are made in the following scales:

MEN'S.

	2	3	4	5	6	7
Total length, center of shoulder to ankle,	55	56	57	58	61	64
Leg	26	26	26	27	28	29
Body	29	30	30	31	33	35
Sleeves	21	22	22	22	23	23

CHILDREN'S.

	3	4	5	6	7	8	9
Length	30	32	34	36	40	44	48
Leg	15	16	16	18	20	23	26
Body	16	17	18	20	21	22	24
Sleeve	13	13	14	14	15	16	18

These measurements are for tuck stitch cloth. If fine stitch cloth is used the garments should be cut one to three inches longer. A table of sizes for women's union suits was given in the Textile World Record for April, 1905. Fillmore.

Recent Knitting Patents.

KNITTING MACHINE. 796,699. William W. Burson, Chicago, Ill.

KNITTING MACHINE Fashioning Device. 797,466. Bernard T. Steber, Utica, N. Y.

STOCKING. 795,633. Max W. Mayer, New York, N. Y.

KNITTING MILL NEWS.

New Mills.

California, Napa. A plant for making hosiery and knit goods will be started here shortly by Charles H. Carter, general manager of the Portland Woolen Mills.

*California, Napa. Articles of incorporation have been filed for the Napa Valley Mfg. Co. to operate a hosiery and knit goods mill. The capital stock is $25,000. It is the only mill of the kind on the Pacific coast and will supply a large trade.

*Connecticut, Putnam. The machinery of the Putnam Knitting Mill, sold at auction recently, was purchased by D. Feingold, of H. & D. Feingold, of Boston. The Royal Knitting Mill Co. has been organized to operate the plant, and work will be resumed at once. H. Feingold is president of the company, D. Feingold vice-president and William S. Johnson treasurer.

Iowa, Elk Horn. Operations have been started by the Olsen & Sons Knitting Co., making knit goods for men, women and children (wool and worsted sweaters and cardigans). The plant is equipped with three knitting and three sewing machines and operated with gasoline. Goods are sold direct. It is stated that they will incorporate next spring.

*Kentucky, Paducah. The Dixie Mills Co., which has been incorporated with capital stock of $100,000, to succeed to the Alden Knitting Mills Co. They are installing a new 125 h. p. engine and building a new brick addition, two stories, 50 by 60 feet, and will instal sufficient machinery to increase production from 700 to 1,000 doz. per day. Will manufacture men's, ladies' and children's seamless hosiery.

*New York, Poughkeepsie. Lawrence & Caven, manufacturers of top shirts and linen mesh underwear, for men, women and children, operate six sewing machines. The linen mesh is purchased from outside parties. The goods are sold direct. W. A. Lawrence is buyer for the company.

New York, Cohoes. The new knitting mill of Laughlin Bros. will begin operations about October 1. The mill will manufacture women's underwear and have a capacity of 100 dozens per day.

Ontario, Dundas. A new knitting mill is to be established here by Messrs. Bickford & Mackay for manufacturing ladies' and children's underwear. They will sell product direct.

Pennsylvania, Adamstown. Pierce C. Mohn, proprietor of the Adamstown Hosiery Mill, will begin at once on the erection of a new hosiery mill, 60 by 30 feet.

Pennsylvania, Topton. It is reported that Oliver C. Rohrbach is to erect a two-story brick building, 26 by 50 feet, for a knit underwear factory. Work will be begun as soon as possible and the mill is expected to have an output of about 100 dozen per day.

Pennsylvania, Philadelphia. The National Hosiery Co. is the name of a new concern just starting out in the manufacture of ladies' lisle, mercerized and lace hosiery, in the mill formerly occupied by Thos. E. Brown & Son at Sepviva and Hazzard Sts. The building, which is four stories high, is being equipped throughout with new machinery and it is the expectation of the company to have part of their equipment running by the middle of August. The members of the company are Gustave A. Rumpf, Jr., and Ernest J. Aucott. Mr. Aucott, who will have charge of the manufacturing end of the business, is well known to the trade as being connected with the recently incorporated Liberty Bell Knitting Co. of Frankford, from which he severed his connection to accept a partnership with Mr. Rumpf in this new enterprise. It is also their intention in the near future to put in machinery for the manufacture of full fashioned hosiery and children's hose. The yarns now being used are 2/36 and 2/40 combed Egyptian and lisle. The goods will be sold direct.

Philadelphia, Pa. The Franklinville Dye Works at Lawrence, Luzerne and Fifth Sts., has recently started up a knitting department for the manufacture of ladies' hosiery, half hose and rib goods, with 100 machines, sixty of which have been delivered and are now in operation, and the others to come within a short time; three sewing machines and twelve loopers, using 14's and 15's cotton and 40's splicing yarns, the goods being sold through

New York. Mr. J. W. Koeberle, who has charge of the plant, is a well known knitter, having had charge of successful plants of this kind in different parts of the country.

*Tennessee, Rockwood. Work will start about September 1 on the erection of a new building for the Rockwood Mills, recently incorporated with a capital stock of $40,000, to manufacture children's fine gauge ribbed hosiery. The plant will be equipped with 100 knitting machines and operated by steam. A dye house will also be attached. Goods will be sold direct. W. H. Goff is superintendent of the mill and Garnett Andrews buyer for the concern.

Enlargements and Improvements.

*Georgia, Columbus. Contract has been awarded for erection of the new mill for the Georgia Manufacturing Co. When completed, the old mill will be equipped as a dye house, machinery for which has not yet been purchased. The company has also placed an order for additional spindles, increasing number to 4,000, to make yarns used in the mill.

Georgia, Macon. The Southland Knitting Mills have recently installed 30 new machines in the plant. This company is operating plant formerly run by the Schofield Manufacturing Company.

Indiana, Fort Wayne. The Wayne Knitting Mills are to install a large engine and two 35 h. p. boilers in the plant shortly. Some additions will also be made to the building.

*Massachusetts, Lawrence. The Lawrence Manufacturing Company is to build a three story brick addition to one of the mills. It will be utilized for carding and spinning purposes. It is expected that work will start shortly on the new building so that it may be completed this fall.

tion, 140 by 90 feet, 1 story, for which contract has been awarded by the McCallum Hosiery Co., will be used for storeroom and shipping purposes for the present. Next year it is proposed to instal machinery in same.

New York, Amsterdam. Messrs. L. L. Dean & Co., proprietors of the Park Knitting Mills, in which they operate five sets, twelve cylinders, on men's underwear, which they bleach and finish, selling direct, have shut down their factory in order that they may make repairs to their machinery. It is expected that they will be in operation again in about two weeks.

New York, Johnstown. The Diana Knitting Co. will start the erection of a dye plant. The building will be 28 by 50 feet, brick, one story, and will be equipped with all modern machinery. It is expected that the new addition will be ready to start up about the first of September.

Ohio, Mentor. It is reported that the Mentor Knitting Mills are to double the size of their plant.

Ontario, Bullock's Corners. The A. & J. Clark Co., manufacturers of blankets, have installed a hosiery plant.

Pennsylvania, Fleetwood. Arrangements are being made by Madeira & Wanner to increase the capacity of the plant. This mill is operated on half hose.

Pennsylvania, Mohn's Store. An addition is being built to the Leininger Bros.' hosiery mill. They will install new automatic machinery.

Pennsylvania, Norristown. The DeKalb Knitting Mills, Greene and Lafayette Sts., operating 40 knitters on children's hose and men's lisle half hose, selling direct, report that business with them is good. The plant will be shut down within a few days for about two weeks when the machinery recently purchased by them from Samuel B. Rhoades, who operated a knitting plant at Glen Riddle, Pa., will be installed, thereby enabling them to double their capacity. Mr. Robert E. Boyle is the manager and buyer.

Pennsylvania, York. The Crystal Hosiery Mills have purchased the old factory property on North George Street and will remove their plant to that location as soon as necessary improvements have been made. The plant will be greatly increased.

Pennsylvania, Allen. At meeting held recently by the directors of the Allen Knitting Company, it was voted to erect a new plant to be known as the Allen Knitting Mill. Work will start at once on construction, and it is hoped to have plant completed by November. Will have capacity of 350 dozens hosiery a day.

*Pennsylvania, Newport. Work has been about completed on the new addition to the Newport Knitting Mill. The capacity of the plant has been increased 100 dozen per day.

*Tennessee, Knoxville. The Standard Knitting Mills will start work Sept. 1st on erection of the new story, 40 by 180 feet, to the mill. They will add 5 new knitting machines (ordered). This plant manufactures men's combed Egyptian and carded Peeler ribbed underwear, and will have knitting machines and 70 sewing machines when addition is complete.

Pennsylvania, Philadelphia. Messrs. J. W. Landenberger & Co., now located at 1711-15 Randolph St., where they are manufacturing women's ribbed underwear and misses' and infants' hosiery on 50 rib frames, 60 knitters and 15 sewing machines, will, during the month of August, remove their plant to enlarged quarters at the S. E. cor. Randolph and Columbia Aves., where they will occupy the third and fourth floors. They are very busy and state that it is their intention to add a number of new machines to those already in operation. The goods are sold through New York.

Pennsylvania, Philadelphia. Rosenau & Loeb, proprietors of the Liberty Hosiery Mills, Mascher street, above Oxford, are considering the matter of starting a branch mill in some of the towns in the vicinity of this city. Mr. Keen, the superintendent and manager of the concern, has been in communication with Mr. Max Schamberg, one of the officers of the West Chester Street Railway Co., who states that he has made arrangements with them for the starting of a plant, containing about forty knitters, in the town of Coatesville, through which this railway runs its cars. The Lib

erty Mill operates 325 knitters on women's, misses' and infants' fine gauge seamless hosiery, which they dye, finish and sell direct. The Coatesville plant will be run on the same line of goods.

Pennsylvania, Reading. An addition, 30 by 90 feet, is being built to the Consolidated Knitting & Spinning Co.'s plant. It will be equipped with the latest improved machinery, as the firm will start shortly spinning yarn.

Pennsylvania, Philadelphia. The Chemnitz Manufacturing Co., formerly at 1226 Orkney Street, have removed their establishment to the old Spencer Mill on Armat Street, Germantown. The building, which is of stone three stories high, has been repaired and remodeled for the Chemnitz Co., who now have their machinery set up and in operation. This concern, which is manufacturing men's, women's and misses' seamless fashioned ribbed and flat hosiery, since they started up several years ago, have removed their plant three times into larger quarters and on each occasion have been compelled to double their capacity. They are now very busy. F. Ulrich is superintendent and buyer.

Vermont, Bennington. The Cooper Mfg. Co. have increased their plant by the purchase of the Coy Babcock Mills for $26,000.

Mills Starting Up.

*Massachusetts, Shelburne Falls. The Orange Knitting Mill at this place has resumed operations after three weeks' idleness.

New York, Cohoes. The mills of the Kavanaugh Knitting Co. resumed work this morning after a two weeks' shut down.

Facts and Gossip.

New York, Amsterdam. The Amsterdam Knitting Co. will soon remove their offices to the Pulling Homestead building on Market street. The factory which they have been running will be vacated and the knit goods manufactured for the glove and mitten trade will be made for them by Robt. McKinnon & Co. The Chalmers Knitting Co. will occupy the building vacated by the Amsterdam Knitting Co.

New York, Buffalo. The Diana Manufacturing Co. has been incorporated with capital stock of $10,000, for the purpose of manufacturing underwear. N. S. Hallett, F. E. Pond and A. R. Jenkins are interested.

New York, Poughkeepsie. Messrs. Lawrence & Caven, formerly connected with the Belfast Mesh Underwear Co., have started a plant for manufacturing shirts and linen underwear at 286 Main street.

*New York, Schenectady. The Gordian Mesh Underwear Co. (Greenwich) is contemplating removing the plant to this place, and the Brandywine mill is being considered.

New York, Utica. It is reported that the entire product of the Oneita Knitting Mills will be sold direct at the opening of the present fall season.

*North Carolina, Malee. The Malee Knitting Mills advise us that they have not yet decided about rebuilding the plant.

Pennsylvania, Nollan. The United States Knitting Mills have been bought by E. Nollan, who has been superintendent of the plant for the last ten years. He intends to add some new power machines and continue the business of making high grade jackets and sweaters.

Pennsylvania, Reading. It is reported that the Mount Penn Knitting Co. is to dispose of the plant and retire from business.

Personals.

J. H. Seaman is now in charge of the carding and spinning at the Truro Knitting Mill, Truro, N. S.

Jos. Ross, bookkeeper for Boswell & Davison, will sever his connection with the firm Aug. 19th and will accept a position at the Green Island Knitting Mill, Cohoes, N. Y.

Edward Ryland, formerly superintendent of the Fort Valley (Ga.) Knitting Mill, has accepted a position as boss knitter with the Maline Knitting Mills of Winston-Salem, N. C.

William Hurd, superintendent of the Worsted Knitting Mills, Worcester, Mass., has resigned, to go to Taunton, Mass.

Henry Spang, manager of the Totaz Hosiery Mills of Tupelo, Miss., has arranged to remove the plant to Columbus, Miss.

Samuel D. Cohan, manager of the Boston Knitting Mills, Boston, Mass., has resigned his position and will engage in the manufacture of sweaters. He will be located at Cambridge, Mass.

A. A. Smith & Son have been appointed as selling agents for the Royal Knitting Co., hosiery manufacturers, Mt. Vernon, Ills.

E. J. Whitcher, of Brattleboro, Vt., has accepted the position as superintendent of the knitting mill at Putnam, Conn., just purchased by H. & D. Feingold, of Boston, Mass.

E. G. Talbot, overseer of dyeing at the British Hosiery Co., Taunton, R. I., has resigned his position with that company.

William Hurd, superintendent of the Worcester Knitting Mill, Millbury, Mass., has resigned to accept a position in a mill in Taunton.

The cultivation of cotton as a commercial fibre began in Georgia about the 16th century. In 1621 cotton sold in the colony of Virginia for 16 cents per pound.

The strength of ropes made from the best Riga hemp is about 1700 pounds per square inch. The strength of ropes made from Manila hemp varies according to the quality of the fibre from 1100 to 1700 pounds per square inch.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Portable Elevator. The Economy Engineering Co., Chicago, Ill., is putting on the market a portable elevator which will handle cases and packages up to 1,000 pounds in weight in any part of the floor or building at a minimum amount of labor. It will pile them to the ceiling and do it speedily with no danger of breakage. Besides the regular type of machine which is in extended use, they make special sizes for particular purposes.

Starch Box for Mules. F. Arrowsmith, Astley, England. A starch box for starching and stiffening the first layers of yarn that form the cop bottoms on self-acting mules. Instead of being stationary the brushes consist of a number of disks filled with bristles which project from a slot in the boxes. These revolve and carry the starch to the spindles. It is said that this arrangement results in the saving of the brushes and the more even distribution of the starch.

Bleaching Machine. H. Krantz, Aachen, Germany, recently brought out a bleaching machine for raw stock, slubbing yarn or cloth. It consists of a tank in which the material to be bleached is placed between two perforated plates. The bleaching liquor is forced through the stock by a centrifugal pump.

Faller Motion. Societe Anonyme Vervietoise, Verviers, Belgium. A friction device for easing the faller motion so as to prevent breaking of the yarn.

Jacquard Comber. Hugo Lewohl, Bergamo, Italy. A double extension comber board which can be contracted or expanded to suit different fabrics.

Mercerizing Machine. Emil Kruse, Barmen, Germany. A machine for mercerizing yarn in skeins.

Cloth Carbonizing Machine. Wagner & Hamburger, Goerlitz, Germany. A new carbonizing machine, which, although it does not embody any new principles is said to possess many points of superiority over all previous machines owing to improved construction. A description appears in another part of this issue.

Attachment for Shoddy Cards. John Haigh & Son, Huddersfield, England, are placing on the market an attachment for removing hard threads from shoddy cards.

Traverse Motion. T. Coulthard & Co., Preston, England. An improved roving traverse motion for cotton drawing and spinning frames.

Automatic Loom. Robert Hall & Sons, Bury. A cotton loom adapted to plain, twill and satin weaves and for an attachment of a jacquard or dobby.

Spinning Rolls. The Societe Alsacienne des Constructions Mecaniques, Mulhouse, Germany, has recently placed on the market an improved device for weighting spinning rolls.

Warp Friction for Looms. J. & J. Bertrand, Barcelona, Spain. An improved friction device for warp beams in the loom.

Printing Machine for Warp Yarn. Alfred Hofmann, Gothenburg, Sweden, is placing on the market an improved machine for the printing of warp yarns. It is said to be simple in construction, and to have many points of advantage over the machines now in use.

Yarn Tester. E. Felme, Markirch, Germany, has recently brought out an apparatus for testing the strength and lustre of yarn.

THE HUNTER INDIGO DYEING MACHINE.

The dyeing of indigo blue has heretofore been accompanied by great difficulties which added materially to the cost of the color and frequently caused damage to the material.

Insufficient reduction causes a loss of indigo, the necessity of a large number of dips for the production of the proper depth of shade and unsatisfactory results in uneven and unequal dyeings, whereas excessive reduction causes partial destruction of the in-

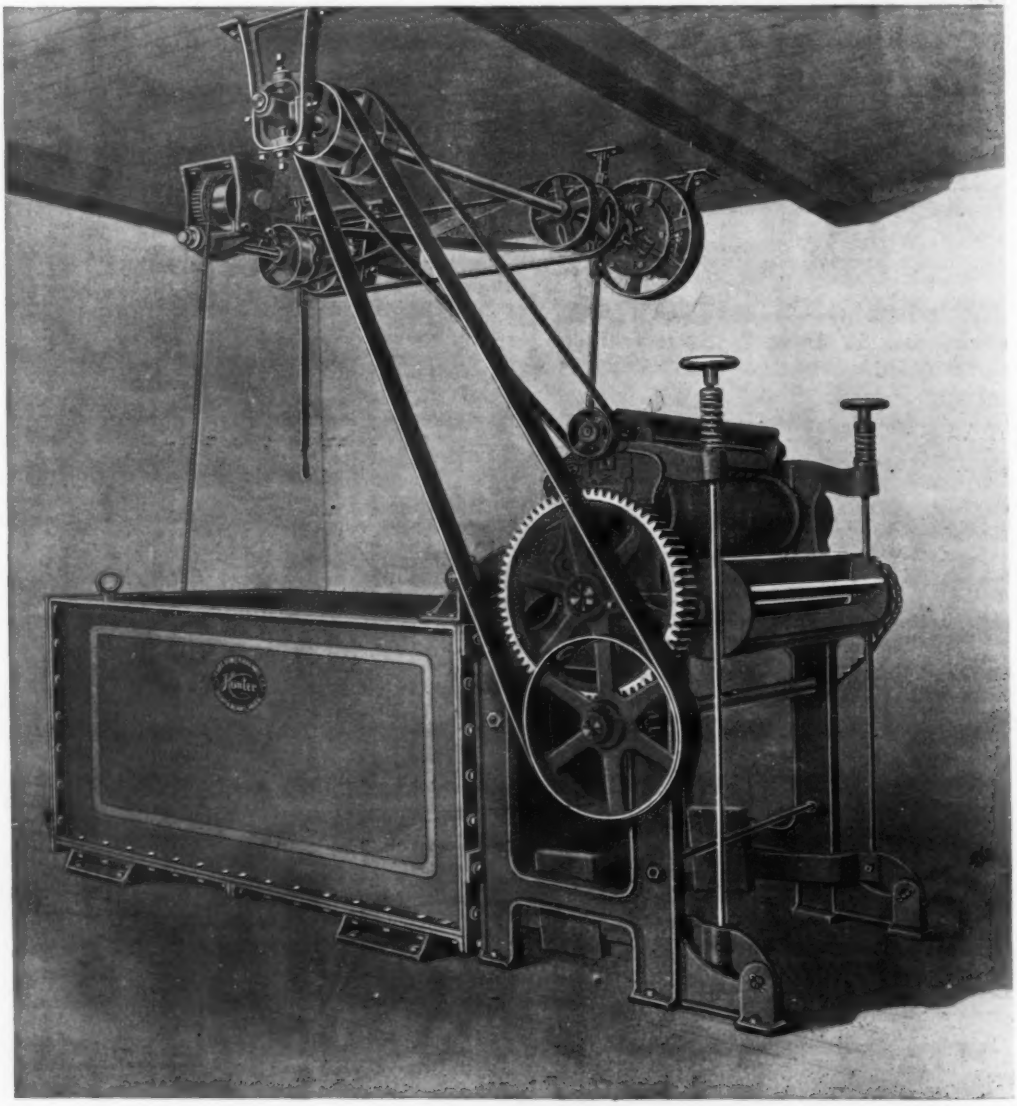


FIG. I.

The process of indigo dyeing was greatly simplified and the cost reduced by the use of the zinc vat, but still left much to be desired. The principal disadvantages of the fermentation and zinc vats are as follows:

digo. The strong alkalinity of the dye vat necessary for a proper solution of indigo white is a detriment to the use of the older vats, as it makes the wool extremely harsh and hard and causes uneven dyeings, and as

in both the fermentation and zinc-bisulphite vats, a very large quantity of insoluble residues is formed and as some of these affix themselves to the wool, uneven dyeings and harsh wool result. In addition to this, larger vats must be employed to allow the settlement of the insoluble matters and considerable more labor is required for the dyeing operation.

The process of indigo dyeing by H. A. Metz & Co., and which is known as Indigo Vat M L B I, is intended to overcome these difficulties of the older methods.

By reducing the indigo in a separate operation and using only the pure and perfectly reduced indigo in working the vat, the strong alkalinity incident in the older vats is unnecessary and as by the use of Indigo Vat M L B I, the dye vat is absolutely clear and free from all insoluble matters of whatever description, the production of uniform and even dyeings is accomplished in the

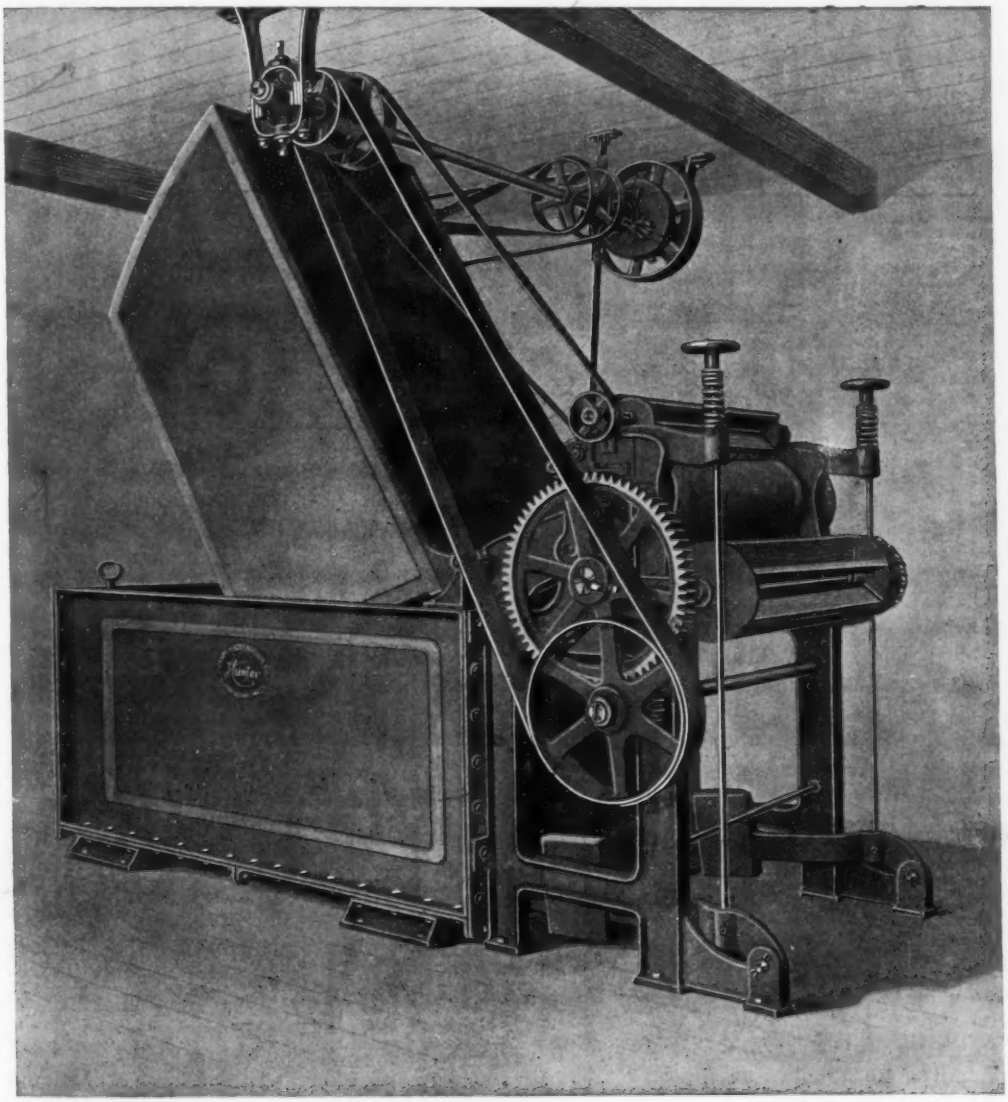


FIG. 2.

smallest possible quantity of dye liquor.

The preparation of the dye vat with Indigo Vat M L B I follows exactly the lines employed in the dyeing of aniline colors, the vat being made by adding a certain proportion of the color and of the several ingredients necessary for the proper preparation of the dye vat. The bath is absolutely clear, containing no sediment and the dyeings have the advantages described under the various headings.

When a zinc-bisulphite vat is allowed to rest, the addition of a considerable quantity of zinc dust and bisulphite is necessary to again reduce the oxidized indigo. This increases the amount of sediment in the dye bath and the difficulties incident to this insoluble matter.

The dye vat made from Indigo Vat M L B I can be stopped as frequently as required, as it can be brought back to its original reduced condition, by the addition of a small quantity of hydrosulphite and ammonia, and as this does not introduce any insoluble matters, the vat is then in as good a condition as it was when first made.

The cost of dyeing with Indigo Vat M L B I is less than that when dyeing with any of the other vats when all the expenses incident to the dyeing operation are taken into consideration. The cost of labor is very materially reduced, as it is not necessary to stir and rake the vat, a vat made with Indigo Vat M L B I being immediately ready for use. A very material saving is made in the amount of ingredients used, for in both the fermentation vat and the zinc-bisulphite vat a considerable excess of reducing materials must be used, as the existing conditions are not the proper ones for a correct reduction of the indigo. In addition to this, a larger amount of reducing materials is necessary to keep the fermentation vat or the zinc-bisulphite vat in proper condition for dyeing than is required to maintain an Indigo Vat M L B I.

A very decided saving in time is accomplished by using Indigo Vat M L B I as the vat is instantly ready for use and does not require several days for its formation. This saving of time in the formation of the vat is still further augmented by the increased amount of material which can be dyed in a vat of given size.

Large dye-vats are necessary in the dyeing of indigo with the fermentation vat or zinc-bisulphite vat on account of the large amount of insoluble matters which must be allowed to deposit at the bottom of the vat, in order that the wool may not become contaminated with them, and as these are not incident to dyeing with Indigo Vat M L B I, at least three times the quantity of wool can be dyed with the latter product in a vessel of the same size.

The success of this vat has been such as to warrant the construction of a machine specially adapted to the new process. It is built by the James Hunter Machine Co., North Adams, Mass., and two views are shown in the accompanying illustrations. The operation of the machine and the advantages of the process are stated by the builders as follows:

The basket is filled with wool, submerged in the vat and allowed to stand from 15 to 20 minutes. The basket is then raised by means of the lift and the wool is passed through the squeeze rolls and delivered into a proper receptacle where it is allowed to oxidize. Wool dyed by this machine by this method is completely penetrated by the dye liquor. Even and uniform shades are produced free from crocking and smutting. The stock is left in perfect condition, retaining all its softness and pliability. The machine handles the stock easily, one man only being required to operate it. The cost of dyeing is reduced, due to the decrease in the size of the vat and saving of time and labor. The machine has a capacity of 100 pounds of wool at a charge.

Fig. 1 shows the side view of the machine as it appears ready to begin dyeing. Fig. 2 shows the basket raised for the stock to drain when the dyeing is finished, thus throwing the wool forward to the apron in front of the squeeze rolls. This enables the stock to be drained and squeezed with very little exposure to the oxidizing action of the air while it contains an excess of dye liquor.

Further information regarding this method of dyeing can be obtained from H. A. Metz & Co., 122 Hudson St., New York City, or from the builders.

THE DE HAVEN "ALL STEEL" SPINNING TRAVELER.

A recent development in ring traveler manufacture which is attracting much attention is the product of the De Haven Manufacturing Co., of Brooklyn, N. Y. It is well known that for many years the travelers sold as "steel" were really only iron wire, case-hardened and tempered. This erroneous title or misnomer has been a detriment to the trade as it has been an obstacle to the adoption of a steel traveler.

The usual practice in making travelers has been, briefly—to take a good grade of iron wire and by injecting carbon into it more or less accurately turn it into a poor grade of steel. To anyone conversant with the case-hardening process the disadvantages of this method are apparent. It is a practical impossibility to carbonize such small pieces uniformly and if they are not thus uniform it is certainly impossible to harden and temper them alike.

The new De Haven steel traveler is made from steel wire into which carbon has been worked through the regular steel process, thus ensuring a thoroughly uniform percentage. The De Haven Co. has built from their own designs machines for handling the material automatically from the time it is shaped into travelers until it is hardened and tempered. The chances of error are thus reduced to a minimum. The travelers are uniform in temper and hardness. The difference between them and the old makes is shown in the grain in steel when it is broken and the fracture examined under a glass. The steel travelers will show a close, fine, silky grain of a dull gray color, whereas the case-hardened product will be coarse, porous and full of bright, shiny surfaces which catch the light. The grain in the De Haven traveler compares favorably with that of high-grade tool steel. The manufacturers of this traveler are confident it will run longer and wear more evenly than the case-hardened goods. It is also claimed for these travelers that they will polish the rings more quickly and leave a smoother surface on them than do the other styles. The wire used is especially smooth and drawn with extra care so that the edges of the travelers are without checks or spots to catch and make defects in the yarn.

AN AUTOMATIC CLUTCH.

The requirements of a friction clutch to be connected and disconnected at the will of the operator may be summarizd as follows:

The operator should have perfect control of a clutch, being able to accelerate a load from rest to full speed, uniformly, and also be able to disengage it with ease.

When totally engaged a clutch should not slip, it should cause a positive union between its members, and be able to transmit the power with the same factor of safety as the members.

There are cases where a clutch is required

FIG. 1.

to slip when a given load is exceeded. This requirement should be applied when necessary.

No adjustment or attention should be required during its lifetime, outside of frequent oiling.

It should be simple and compact in construction, neat in appearance, round and smooth, with no projecting parts.

The life and durability of a clutch should be as great as possible, and have interchangeable wearing parts.

A clutch should operate satisfactorily running at any speed, and with any amount of oil.

It was to meet these requirements that the Automatic Clutch Co., Akron, Ohio, designed the clutch shown in the accompanying illus-

tration. Fig. 1 shows the clutch run in connection with a gear. The working parts are shown at Fig. 2 in disengaged position.

A is the operating sleeve which carries the pins, B and C, shown in section, which fit between the faces of the cavity in the keyed member, D.

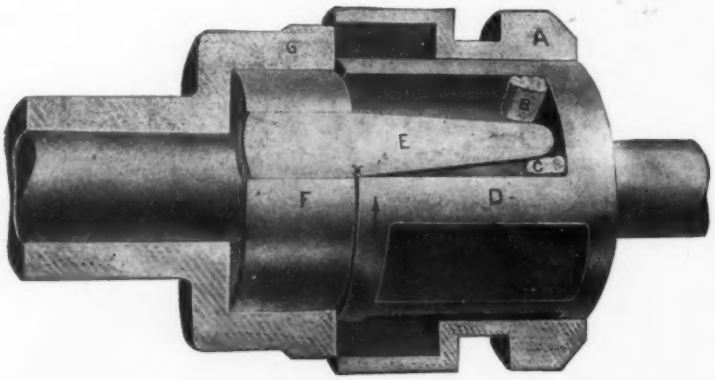


FIG. 2.

Loosely placed between the pins, B and C, is a lever, E, which extends between the ends of the expansion ring, F, which is surrounded by the cup or loose member, G.

If the keyed member, D, be rotating in the direction indicated by the arrow, the ring is freely revolved by the lever E, which is driven

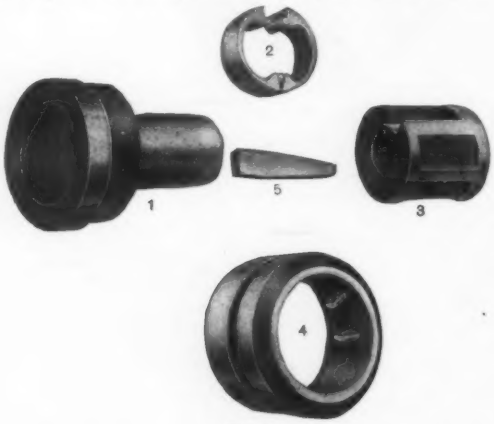


FIG 3

at point, x, as pin, C, is free of the lever; and pin, B, operates on the lever only when the member, D, is revolving in the opposite direction.

When the clutch is engaged the sleeve A is moved to the left, and pin C gradually relieves the bearing point x on lever, and the member D drives the ring by the lever through the pin C. This causes the lever E to expand the ring F within the cup G, with such pressure that the friction caused exceeds the force on the lever, therefore the greater the load the tighter the grip.

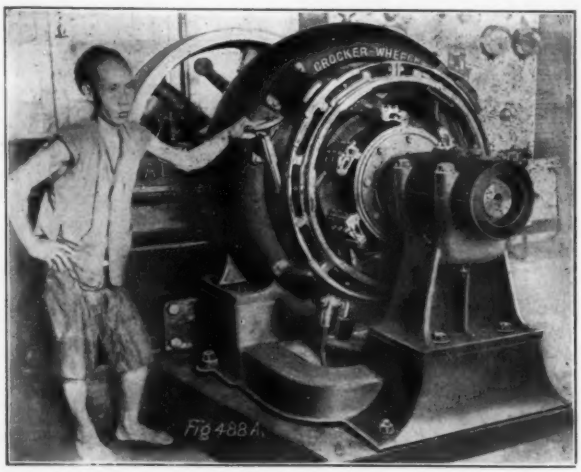
This clutch consists of only five parts, as shown at Fig. 3. Its merits have been thoroughly demonstrated by experience under a wide variety of conditions, and among the claims which the manufacturers feel warranted in making for it are the following: That it is the most compact clutch ever placed on the market; that it is unsurpassed for simplicity, having no toggles, links or bolts, and requiring no adjustment; that it will operate equally well at any speed, either under ordinary oiling conditions or when submerged in oil, as is necessary with automobiles; that it grips automatically to carry the load put upon it and cannot slip when engaged; that with it the speed is uniformly accelerated to full speed, when the clutch is locked by a positive attachment. It can be made to slip automatically at a given load if desired.

Vicuna yarn is a mixture of 90 per cent. and upwards of cotton with 3 to 10 per cent. of wool.

The largest water power plant in America next to Niagara is projected at the Suck on the Tennessee River near Chattanooga. The power plant is to have a minimum capacity of 36,000 H.P., and this amount of electricity will be delivered in Chattanooga.

CROCKER-WHEELER DYNAMOS IN THE ORIENT.

One of the chief requisities of any machine is simplicity, and that this is possessed in an exceptional degree by the Crocker-Wheeler dynamo is proved by experience with these machines in the Orient, where one dynamo was instilled in 1901 and another last year. After going half way round the world they reached their destination in good order, were installed without difficulty, and have been operated successfully by natives, whose mechanical experience seldom comprehends anything more complicated than a wooden plow.



THE CROCKER-WHEELER DYNAMO IN MANILA.

The accompanying illustration shows one of these machines which was installed in the Bureau of Printing at Manila. The native attendant who stands by the dynamo is quoted as saying: "Me saber Crockerne-Whelem electricidad maquina," which freely translated means, "There's nothing I don't know about Crocker-Wheeler machines." These dynamos are built by the Crocker-Wheeler Co., Ampere, N. J.

The cotton crop of China is estimated at about one and one-half million bales, and it is all manufactured in the Chinese Empire and in Japan.

A TIME AND LABOR SAVING DEVICE.

The latest device for the handling of heavy bales, boxes, etc., is the "Economy" steel tiering machine shown in the illustration. This machine is built by the Economy Engineering Co., Chicago, Ill. All manufacturers, jobbers or others who have heavy boxes or bales or articles of any description which are required to be piled in warehouses will find it a very useful device and a great saver of time and labor, as well as preventing the breaking of the packages and boxes.

The machine is made of steel throughout and is so constructed as to give a maximum strength for a minimum weight. It handles boxes or bales up to 1,000 pounds and piles them to the ceiling without the possibility of breakage and with very little effort. One man with this machine can handle a thousand pounds as easily as four men can handle five or six hundred pounds, and pile the packages twice as high. It is primarily a portable elevator and may be taken to any part of the building with very little effort, it being constructed to run on three wheels, one wheel of which is pivoted with a handle or tongue so that the whole apparatus may be readily moved to any position. It is also necessary to have a machine of this nature perfectly stationary when in operation. When the handle is released the front part of the ma-

chine settles down on two feet which hold the entire machine perfectly rigid and prevent it from slipping or moving while loading.

This machine is a decided improvement over the old four-post machine, as the size of the box or bale is not limited. The cantilever construction leaves three sides absolutely unobstructed, giving a capacity for packages of various sizes and a facility for loading and unloading that it is impossible to obtain with other platforms. The floor of the platform is 30 by 34 inches and elevates to within two feet of the total height. The standard size is 9 feet 6 inches, and the bottom of a box or bale may be lifted 7 feet 6 inches from the floor.

The hoisting device is so constructed that one man can easily raise 1,000 pounds at a speed of about 15 feet per minute. For lighter loads the crank may be used on an intermediate shaft, obtaining twice the platform speed. The brake is a special feature of this machine and is very positive in action. It is so constructed that the machine may be stopped at any point, even with the heaviest load, without the possibility of slipping downward. This brake may also be used for lowering a heavy box or bale without the use of the winch crank. The working parts of the machine are well proportioned to stand wear, the journals being long and of large diameter and the shafts of the best cold rolled steel. The base frame wheels have hardened steel roller bearings, ensuring an easy operation quite out of proportion to the work carried. The construction of the entire machine is in strict accordance with the highest engineering practice.

Each machine has a pair of removal platform rollers, two pipe rollers, a tool steel pinch bar, and a cast steel winch crank. With these tools one man can easily load and unload a package weighing 1,000 pounds. The platform rollers are very strongly made and can be placed on the platform for loading either from the side or front as desired. A pocket is provided on one side in which the pipe roller and pinch bar equipment is kept when not in use.

The builders are confident that any one handling heavy boxes or bales will find the "Economy" tiering machine a great saver of time and labor, to say nothing of space, which is a very important item in most warehouses. One of the strongest recommendations that can be given it is the fact that nearly every one ordered on trial is not only retained, but followed by repeat orders. The Economy machine is now in use in some of

AN "ECONOMY" TIERING MACHINE.

the largest mills in the United States. Further information, including a descriptive catalogue, can be obtained upon application to the Economy Engineering Co., 641 North Jefferson St., Chicago, Ill.

The annual output of American silk mills is valued at $107,000,000.

For the twelve months ending December, 1904, there were imported into the United States 49,008,974 pounds of cotton valued at $8,547,967. During the same period manufactured cottons were imported to the value of $47,423,181.

AN ATTACHMENT FOR SPINNING MULES

This mechanism, which has recently been patented in this country, is intended to lock the mule carriage securely in position when it is stopped, and thus prevent any rebound and damage to the yarn. Fig. 1 is a sectional side elevation of the device. Fig. 2 is an enlarged front view, showing the carriage-locking device in an inactive position. Fig. 3 is a side elevation. Fig. 4 is an enlarged front view, showing the carriage locked in place; and Fig. 5 is a side elevation.

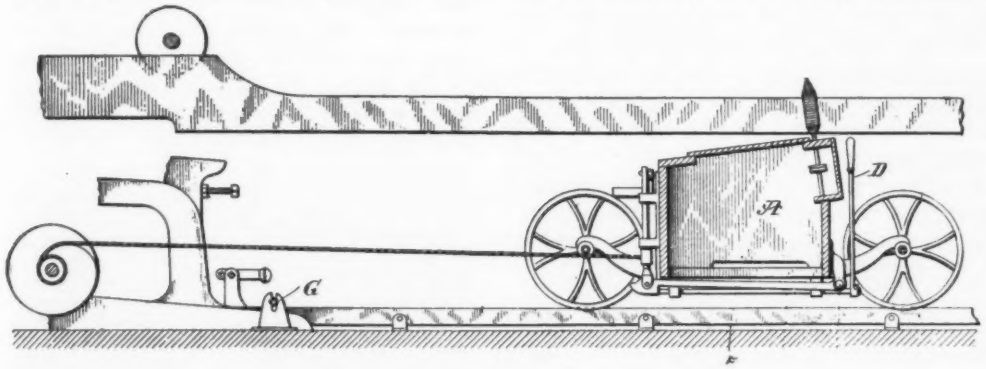


FIG. 1.

When the lever, E, of the travel-changing device, which is on the carriage, is thrown by the shipper handle, D, to the right in the position shown in Fig. 2, the lever, when the carriage approaches the head-stock, operates upon the mechanism to start the carriage on its outward movement. When the lever is in this position the travel of the carriage is continuous. When, however, the lever, E, is thrown to the left in the position shown in Fig. 4, it does not operate the actuating mechanism which remains inactive and the carriage stops.

The carriage by its acquired momentum rebounds when stopped, and to prevent this rebound a locking device is provided to hold the carriage securely and lock it in place the moment it is stopped. By preventing the rebound of the carriage a subsequent imperfect formation of the yarn is prevented, as the forcible rebound of the carriage tends to stretch the yarn unduly, rendering it weak or imperfect. The locking device consists, essentially, of a hook, F, extending longitudinally under the carriage, A, and fulcrumed, as plainly indicated in Fig. 1. The hook, F, is adapted to engage a keeper, G, fixed to the floor or to the frame of the head-stock, so that when the carriage reaches the end of its return stroke and is stopped, the hook, F, is at its lowest position and engages the keeper,

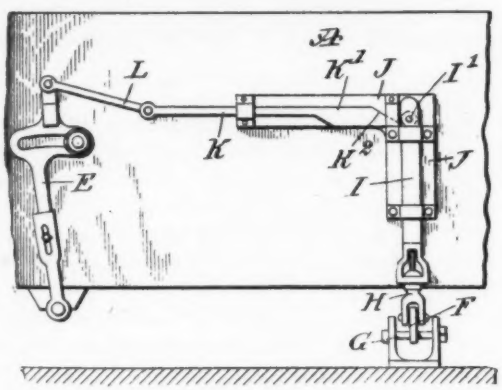


FIG. 2.

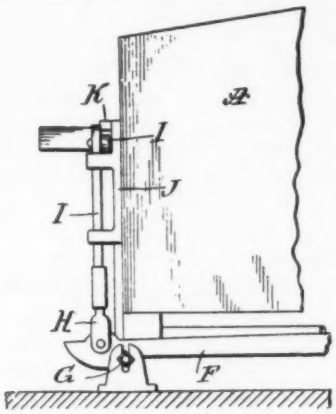


FIG. 3.

G, and thereby locks the carriage against rebounding. While the carriage is on its ordinary travel to and from the head-stock the hook, F, is held up in the position shown in Figs. 1, 2 and 3, so that the head of the hook does not engage the keeper, G. Consequently the locking device does not interfere with the carriage as long as the latter is traveling forward and backward during the spinning operation. The hook, F, is, however, automatically swung downward to engage the keeper, G, as previously described, whenever the lever, D, is thrown over to bring the stopping device for the carriage into action and the carriage has been stopped.

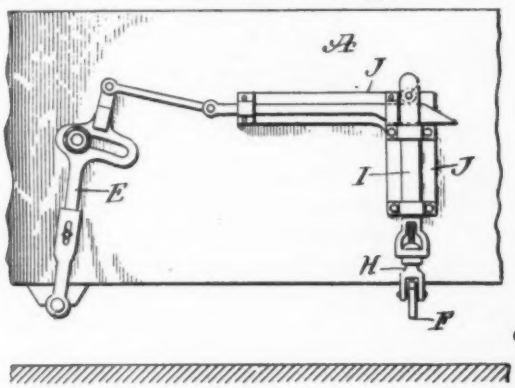


FIG. 4.

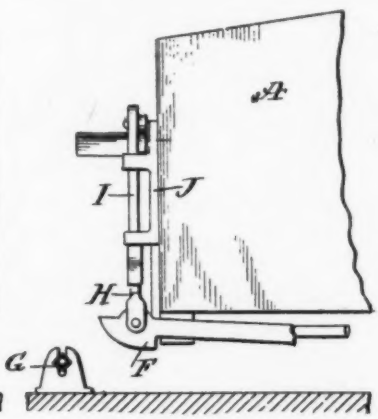


FIG. 5.

For this purpose the free end of the hook, F, is connected by a link, H, with a slide, I, mounted to slide up and down in suitable bearings formed on a bracket attached to the carriage. On the upper end of the slide is journaled a friction-roller, normally resting on the top edge of the head of a bar, mounted to slide transversely in suitable bearings arranged on a bracket. The bar is pivotally connected by a link with the upper end of the lever, E, secured at its lower end on a shaft, on which the stopping-lever, D, is secured. The free end of the bar is provided with a bevel, so that when the shipper, D, is thrown over by the operator the lever, E, swings into the position shown in Fig. 4. This lever imparts a transverse sliding motion to the bar so that the beveled end travels under a friction-roller. The slide and link by their own weight move downward to swing the hook into position and into engagement with the keeper, as shown at Figs. 4 and 5, to lock the carriage and prevent a rebound.

AN UNUSUAL PROSECUTION.

At the Bradford West Riding Police Court on July 20th, a dyer's laborer of Shipley was summoned by the Bradford Dyers' Association, Ltd., for wilfully damaging 500 gallons of water. The matter, of course, was not of the trivial character implied by the charge, the prosecution being due to the fact that the object of the offence was obviously to do an injury to the foreman or to the firm by causing defective dyeing. It was the practice in the works in question to fill the vats with water overnight, the materials to be dyed being placed near the machines so that the dyeing could proceed immediately on the arrival of the dyers in the morning. For some time past, defective dyeing had occurred in the works at intervals, and as the result of special watch the defendant was seen to mix a quantity of nitrate of iron with the water. The defendant was convicted and committed with one month's hard labor.

The above prosecution is of considerable interest to the dyeing trade, as it is the outcome of an action on the part of an operative which is, unfortunately, not at all uncommon and very often difficult to detect. It is, unfortunately too easy a matter for one with evil intent to cause very serious damage and trouble by an action of this character, and the fact that if damage to the extent of upwards of £5 is proved, the offence may be punished by two years' imprisonment, cannot be too widely known.—Journal of the Society of Dyers and Colorists.

Dyeing, Bleaching, Printing, Etc.

THE COMPOSITION AND PROPERTIES OF CHLORINATED WOOL.

BY JOHN H. FIEBIGER.

This thesis received honorable mention in competition for the Textile World Record's Gold Medal, 1905, at the Philadelphia Textile School.

JOHN H. FIEBIGER.

By the term chlorinated wool is meant wool that has been subjected to the action of solutions of chloride of lime, or other hypochlorites. This process of chlorination which promises to be of interest both to the manufacturer and the scientist, was first investigated by John Mercer, the well known chemist who was also the inventor of mercerization process for cotton. He not only found that the wool fibre acquired a yellow color through treatment with chloride of lime, but also found that the wool absorbed as much as 33 per cent. of chlorine. A few years later John Lightfoot discovered that the affinity of wool for dyestuff was increased by chlorination, and obtained a patent on this subject in England on September 11, 1865. Jacob Behrens, as a representative of Henry Caro, discovered that crimp effects could be produced in woolen piece goods by chlorination. There was nothing positively known of the chemical changes which took place in the wool fibre at that time, and unfortunately the literature relative to the method of chlorinating wool is at present very limited.

In making a comparison of chlorinated wool, and the untreated fibre it will be immediately noticed that there are many points of dissimilarity. First it will be found that the chlorinated wool has acquired a yellow color and an increased lustre. Next a marked difference will be noticed in the feel of the yarn. By the process of chlorination the wool acquires a very harsh handle. This property is very similar to that termed the "scroop" of silk. Another important point of difference is that the treated wool has lost its felting properties and thus has become "non-shrinkable." It will be readily seen that this point is of great value to designers of woolen materials for the preparation of novel effects and non-shrinkable goods. Upon investigation it was found the treated wool had not only increased in strength and elasticity, but that it had a marked increased affinity for dyestuffs and mordants.

The chlorination of wool is best carried out in practise as follows: The material is first freed from all greasy matter by a preliminary scouring and washing in the usual manner with a five per cent. solution of soap, and a two per cent. solution of soda ash. This cleansing must be very thorough otherwise good results will not be obtained, as the yarn is liable to "finish up" very uneven. The woolen yarn is then steeped in a solution of hydrochloric acid, which should be cold, and have a density of 1 1/2 degrees, Tw. The wool should be kept in this bath for twenty minutes. It is next passed into a cold solution of bleaching powder, standing at 3 degrees, Tw., and worked for ten minutes after which it is again passed back into the acid bath, and scoured off. It is finally washed thoroughly in hot water. If the odor of chlorine is still apparent in the fibre after washing, this objectionable feature may be removed by passing the material through a bath containing 5 per cent. of bisulphite of

soda (on the weight of wool) at 85 F., and again washing with lukewarm water. This will not only remove any traces of chlorine, but will also bleach out the yellow color of the fibre in a great measure. The odor of chlorine is also removed by soaping the yarn after the process of chlorination.

In the above process it was found that nascent chlorine is liberated by the action of the hydrochloric acid on the bleaching powder. Several theories have been advanced as to what happens to the wool when exposed to the action of the halogens. The most generally accepted theory is that the chlorine combines with the wool fibre.

The process of chlorination as outlined above, may be varied in a number of ways; for example, by using sulphuric acid in place of hydrochloric acid. As this acid, however, forms calcium sulphate on the fibre in reaction with bleaching powder, it would interfere with the proper dyeing of the wool if not removed. The yellow color however which the chlored wool acquires is lighter when sulphuric acid is employed. Sodium hypochlorite of a density of 2 degrees, Tw., may be used in place of the solution of bleaching powder. It is a trifle more expensive, but avoids the introduction of any lime compounds into the fibre. It also obviates the necessity of settling the bleaching powder solution before using, and the keeping of the solution in storage tanks. Sodium hypochlorite gives as good results, and probably better, than the solution of bleaching powder. Hypobromite of soda may be used in place of the hypochlorite as its action on the wool fibre is the same, but being more expensive it is not likely to be generally employed. The hypobromite is said not to leave as deep a yellow color on the fibre, and for light shades it might be advantageously employed.

The hypochlorite solution should not be too strong as much harm can be done. If so used the tensile strength of the yarn may be much weakened. This is no doubt due to the presence of caustic soda in bleaching powder.

By a microscopical examination of the fibre it was found that the exterior of the irregular rough edges of the scales on the surface of the wool fibre were smoothly glazed over. This accounts for the lack of fulling or felting properties in chlored wool, and for its increased lustre. The wool also becomes somewhat stronger as will be seen by the results given below, and its elasticity is also increased from 7 to 10 per cent. according to the yarn used. This increase in strength of the chlorinated wool is no doubt due to the segregation of the external scaly layer surrounding the fibre into a homogenous and continuous tissue, the effect being to give the fibre more the appearance and structure of hair. This also accounts for the increased lustre and elasticity of the chlorinated wool.

EXPERIMENTAL RESULTS.

Tensile Strength Test of 2/28 Worsted Yarn.

	Untreated.	Chlorinated.
I.	20 lbs.	20 lbs.
II.	19 lbs.	22 lbs.
III.	22½ lbs.	25½ lbs.
IV.	21½ lbs.	22½ lbs.
V.	22 lbs.	24 lbs.
VI.	21 lbs.	22½ lbs.
VII.	21½ lbs.	24 lbs.
VIII.	21½ lbs.	24 lbs.
IX.	21 lbs.	23½ lbs.
X.	22 lbs.	25 lbs.
	21.2 Average.	23.3 Average.

Gain in strength, 9.9 per cent.

Elasticity Test of 2/28 Worsted Yarn.

	Untreated.	Chlorinated.	Gain of
I.	1¼ inches	1 9/32 inches.	1/32 inch.
II.	1 7/32 "	1¼ "	3/32 "
III.	1 3/16 "	1¼ "	2/32 "
IV.	1 5/32 "	1⅜ "	6/32 "
V.	1⅛ "	1¼ "	4/32 "
VI.	1¼ "	1¼ "	..
VII.	1 3/16 "	1¼ "	2/32 "
VIII.	1⅛ "	1⅜ "	5/32 "
IX.	1⅛ "	1⅜ "	5/32 "
X.	1¼ "	1¼ "	..

Average gain, 10 per cent.

It was also found by a chemical analysis that an indeterminate amount of chlorin was taken up by the wool fibre by chlorination, and as high as 14 to 20 per cent. was found present in chlorinated wool. Only a very small amount of chlorin was removed by the action of bisulphite of soda upon the chlorinated wool. The highest amount of chlorin found to be removed was one-tenth of a per cent. of the chlorin absorbed, and in many cases no chlorin was found to be removed. Only the yellow color and the unfixed excess of chlorin was removed by the action of bisulphite of soda on the treated yarn.

The chlorinated wool fibre absorbs about

twice as much dyestuff as ordinary wool. Untreated wool when dyed together in the same bath with chlorinated wool is left almost white at times or only tinted. It should be borne in mind that if the material is dyed at a boiling temperature the unchlored material is dyed somewhat deeper than otherwise, but if dyed cold or at 120 deg. F. a much better contrast of the colors in the two fibres is obtained.

Alkalies should be avoided in the "filling" process as they have a tendency to level the color affinity of the chlorinated and untreated fibre.

A fabric containing chlorinated and untreated wool was dyed with substantive dyes at 120 deg. F. for half an hour, and 10 per cent. of Glauber's salt (on the weight of the wool) was added, and then 4 per cent. of acetic acid was slowly added. The addition of the Glauber salt was to exhaust the bath and the acetic acid was used to produce more even results. The goods were then thoroughly washed and dried and stretched in the usual manner and were ready for "finishing." The fastness of the colors were not altered in any manner.

Acid dyes can also be used and give very good effects at the temperature of 120 deg. F., leaving the untreated wool also white or slightly tinted, and dyeing the chlorinated wool a full shade. The fastness of the dye is also unaltered.

Basic dyes were also tried on the mixed fabric, but as satisfactory results were not obtained as with the substantive and acid dyes.

Mordant dyes, such as the alizarins, were also dyed on chlorinated and untreated wool, and very good results were obtained as the unmordanted chlorinated wool was dyed to almost the same shade as that produced on mordanted skeins of wool yarn. The dyeing was carried out in the usual manner with 4 per cent. of acetic acid and 10 per cent. of Glauber's salt (on the weight of wool) at 120 deg. F. for half an hour. The chlorinated wool was dyed almost a full shade and the untreated wool was only slightly tinted as usual. But the full shade on the latter may be produced by mordanting with 3 per cent. of chrome, and 4 per cent. of sulphuric acid.

APPLICATIONS OF CHLORINATED WOOL.

Two colored effects may be produced by weaving together chlorinated and untreated wool in any design, then dyeing with substantive dyes, and topping with acid dyes in the usual manner of dyeing. This method produces such effects as black and red or black and blue, etc.

Crimp effects may be produced by using wools of a wiry nature for chlorination, or those which shrink with more difficulty on fulling. By weaving these chlorinated hard qualities of wool together with the softer untreated wools, which are more liable to shrink, very beautiful crimp effects are produced.

Non-shrinkable garments such as woolen underwear may be made by chlorinating woolen goods on account of the chlorination process destroying the fulling quality of the fibre.

By the chlorination process a high degree of lustre and scroop can be imparted to the fabric.

The chlorination of wool is also used in woolen printing whereby the cloth is submitted to an adequate preparatory chlorination treatment. This may be carried out in a number of ways:

1. Chlorine prepare.
2. Tin or stannate prepare.
3. Chlorination prepare.

The first-named process is that generally used, and is carried out in two ways, viz.: (1) by passing the pieces through a mixture of hypochlorite of soda, or lime and an acid, generally sulphuric acid; and (2) by first passing the goods through a solution of the acid, followed by a passing through the hypochlorite solution. The former method is generally preferred and the bath contains the following constituents:

Chloride of lime, 12° Tw.,	1 gallon
Hydrochloric acid, 30° Tw.,	1 gallon
Water,	40 gallons

If this process is used, care must be taken that the bleaching powder solution is clear and free from solid particles, or the goods will be prepared in an uneven manner .

The first English wet spinning mill for flax was started in Leeds.

A NEW PRINTED AND MERCERIZED FABRIC.

BY GEORGE DONALD.

The object of the process described in this article is to produce a novel fabric for printing which, when finished, will show a changeable, lustrous and prismatic color effect, the ground being one plain shade, the figures in several shades of color, and appearing to have the colored pattern printed on the warp before weaving. It should to some extent take a place among warp printed silks and mixed goods.

The cloth for printing is made thus: The filling yarn to be of common unmercerized cotton, single twist, fine counts, and dyed in a few standard fast shades in the usual way, such as aniline black, or any of the fast diazotized blacks, indigo blue, paranitraniline red, Bordeaux, and also, as will be mentioned further on, certain so-called benzo, or direct coloring matters, in order to produce discharge effects. The warp yarn should be of mercerized 2-ply yarn, fine counts, 2/60s or 2/80s, not dyed, but prepared in a solution of tannic acid 2 to 3 ounces per gallon of water, passed through a solution of tartar emetic of a strength of 1 to 1 1/2 ounces per gallon, dried and treated in the usual way ready for weaving. This is really the important feature in the process, viz.: so treating the mercerized warps that though white in the woven cloth it will not only look like silk, but with certain basic aniline colors will act like silk. Upon this point the novelty and utility of the fabric depend.

The cloth, woven in any variety of fancy figured patterns from twills to dobby and jacquard work, is ready, after a preliminary washing and drying, for color printing by the ordinary cylinder calico printing machine. The printing designs need not consist of more than three colors. By superimposition these can be made to give the effect of several more tones and shades. The designs may be small checks, lozenges, narrow parallel stripes, polka dots, or any conformation that will show a little of each color on each object in the weave pattern, but there should be no white in the printing pattern. In printing, a strong "nip" or pressure between the engraved rollers and the cylinder should be given in order to send the colors well through to the back of the cloth.

The printing colors are made up from ordinary print works color-shop standard solutions of the basic aniline colors. Some are not so suitable for the purpose, but these can be used: Safranine, Methylene and Thionine Blues, Brilliant Green, Phosphine, Rhoduline Red B, and Violet, Turquoise G, and others as experience suggests. These coloring matters are dissolved in acetic acid and water, the most convenient strength for standard solutions being 8 ounces to the gallon.

The thickening used in mixing the printing colors must be gum dextrine or highly roasted British gum so that it may be easily removed in washing after steaming. When printed the goods are steamed in the usual way for about half an hour without pressure. They are then washed in a dobby machine with plenty of water alone or given a very light soaping, but this cleansing treatment should be sufficient to remove all the printed color from the dyed filling, yet leaving it on the mercerized threads of the warp.

The important object is to have the basic aniline colors adhere to the tannin prepared mercerized warp, for which they have affinity, and still be removed from the ordinary cotton yarn for which they have practically none. Thus the warp threads will appear to have been printed on the beam before weaving.

In finishing the goods, gum tragacanth solution should be used, applied to the back, and containing no oil or softening but a small quantity of tartaric acid or alum. If white shows on the back, benzo colors, the same shade as the grounds, may be added to the finishing gum to make the goods look solid.

As an additional variety of effect, should certain benzo or direct colors be used in dyeing the filling yarn, discharges can be produced by printing on the washed woven cloth a thickened solution of tin acetate or a mixture of zinc dust ground up with glycerine and gum gedda. The result will be to cut out the dyed ground color leaving the printed

colors running through the discharged places. Not every benzo coloring matter will suit, but the following can be used:

Reds.—Benzo-purpurin 4 B, Diamine Red B and 3 B, Rose Azurine B and G.

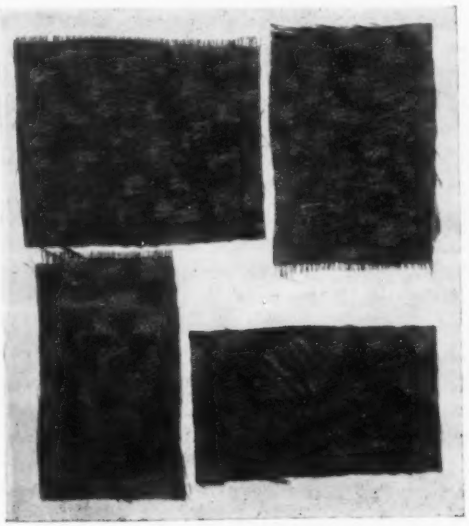
Orange and Yellows.—Congo Orange R, Toluylene Orange G, Chrysamine G.

Blues.—Benzo-azurine G, Benzo Indigo Blue, Benzo Black, Blue, Benzo Sky Blue.

Browns.—Benzo Brown, Mikado Brown.

Blacks.—Direct Blue Black B, Direct Deep Black.

Finally, by using plain white filling in-



stead of dyed yarn in weaving the figured fabric, together with the tannin prepared mercerized warp, and printing, steaming and washing the cloth as above described, the result will be a multi-colored design running through the weave pattern, on a white or practically white ground. These colors being apparently printed in the warp before weaving.

The accompanying illustrations show four samples made by this process of dyeing and printing, but the peculiar effect cannot be reproduced in the engraving.

In the time of James I nine-tenths of the commerce of England was woolen goods.

Bryant's Ancient Mythology says the art of weaving was first practised in Babylonia.

CHROME POISONING IN ENGLISH DYE-WORKS.

BY WESSEX.

The subject of chrome poisoning in dye works made topical by the timely article in a recent issue of the Textile World Record is no new one in England. For more than a generation cases of chrome poisoning have been common in the Yorkshire dyeworks. Mild cases are of daily occurrence. Instances of the evil can scarcely be unknown in America and doubtless American dyers will be interested to know the measures adopted in Britain to mitigate its ill effects. A year ago the present writer investigated a very large number of cases on behalf of a popular weekly journal. The series of articles which followed moved one of our Government Departments to inquiry and though no definite steps have followed as yet, it is not improbable that at some time the whole practice of dyeing may be classed among "dangerous trades." The workmen's unions are intent upon obtaining legislation that will ensure certain safeguards and efficient inspection of the more dangerous processes. Workers in lead, arsenic, phosphorus, explosives and the like already enjoy such protection.

The liability to chrome poisoning appears to depend much on the personal equation. Men with a scrofulous tendency are very susceptible, but any cut or sore may admit the poison to the blood. The first case to fall under the writer's notice was that of a warehouseman, part of whose work it was to roll black dress goods by hand. The action of rolling cloth round a board upon a table brings the right hand, wrist and forearm into intimate contact with the cloth. Of course the goods were perfectly dry and ready for consumption. The victim's first intimation that he was "chromed" arose from a violent itching in the arm, so torturing in its effect as to forbid sleep. Spots or pustules followed and during the night his arm would swell to double its normal size. He was laid off from all work and delivered over to the doctors to be drenched and drugged and hydropathed. But though medical science can

alleviate, it cannot cure chrome poisoning. Once in the blood the insidious acid remains till the end and is a cause of more or less suffering for life. One has seen the arms of several men who for twenty years have been chronic sufferers from chrome.

Happily the harm is usually limited to an acute attack and to minor recurrences. Such is not invariably the case, though. The presence of the poison in the system may betray itself by an unconquerable desire to pick and scratch the mucous membrane of the nose. The victim then has no spots upon the arm, for the mischief is internal. Probably in some cases the poisoning is cumulative for a man who beyond this itching about the cartilage of the nose, appears to be unscathed, will suddenly die of ulceration of the stomach and intestines. The ulcers are the manifestation of chrome and they may be seen in cases externally. Sometimes even they gnaw through the flesh and down to the bone.

The greatest of all dangers is incurred by those who handle the crystals of the bichromates in the dry state. Laborers in the factories in which bichromates are made lose large portions of their ears and noses and die horribly often at an early age. Severely protective regulations are now in force in the bichromate works at Glasgow and elsewhere.

In the dye-houses, chrome attacks those who manipulate the mordant for loose wool, but more especially the attendants on jigging machines, who must open out the cloth from folds as it runs over the rollers. A master dyer told the writer how a young man new to the trade and of a scrofulous disposition was set to this work. In a fortnight his face, neck and hands were a mass of festering sores, his head was twisted permanently almost over his shoulder and the poor fellow was crippled thus for the remainder of his days.

Again, there is an instance of a retired soldier, fresh from foreign service, whose pores were all dilated by long residence in India. Beginning one Monday morning he worked for twenty minutes handling chrome-soaked cottons. At the end of that time he was ill enough to cause the foreman to observe his distress and to send him home. The veteran should have returned the following day to take up other work in the dye-house. But chrome kills whom bullets spare and within six weeks the ex-soldier was in his grave and if his tombstone had borne the truth it would have said: Murdered by chrome.

These terrible facts are only single instances out of a multitude. The complete story of the mortality nobody knows, for deaths are attributed to other causes which are in fact caused by chrome. The slighter casualties are often unnoted because they befall the flotsam and jetsam of the great commission-working dyehouses. Men come from any trade or none to work a spell at the unskilled task of handling piece goods. But foreman dyers have grown wary. They do not now employ any but robust and healthy-skinned individuals to come near chrome. Whereas a few years ago a complaint of chrome poison brought no recognition save bad language, it now meets with some respect. A man infested is immediately assigned to work in another department or advised to leave the trade. Similar care is being exercised in connection with the dyeing of aniline for fast black on cotton. Indeed expediency, as well as humanity, dictates the need for all possible precautions. Official restrictions are liable to be irksome and to involve an expense that can be saved by intelligent individual effort.

CORRECTION.

In the August issue of the Textile World Record the color given in Recipe 126 as Tetrazo Red B, should have been Tetrazode Red B.

METALLIC POWDER ON CLOTH.

A mixture for applying metallic powder to textile fabrics has recently been patented in France. It consists of the following ingredients:

15	parts gelatine
50	parts glycerine
835	parts water
100	parts metallic powder
1,000	

New Color Cards.

Oxy Diaminogene; Cassella Color Co., 182 Front St., New York City.

Ten samples including cotton yarn, raw and mercerized, mercerized cotton piece goods, velveteen and knit goods, dyed with different percentages of Oxy Diaminogene FF and FFG pat.

Para Diamine Black B; Cassella Color Co., 182 Front St., New York City.

Two samples of cotton yarn and one of cotton piece goods dyed with Para Diamine Black B.

Dyeings on Woolen Fabrics; Cassella Color Co., 182 Front St., New York City.

Twelve samples of woolen piece goods dyed with different colors and discharged with Hyraldite W.

Ortho Cyanine, Ortho Cerise, Ortho Black; Berlin Aniline Works, 215 Water St., New York City.

A folder showing twenty samples of woolen piece goods in a variety of patterns and dyed different shades with the Ortho dyes, Cyanine R, B, 6G, Cerise B, and Black 3B.

Immedial Indone B N; Cassella Color Co., 182 Front St., New York City.

Two samples of cotton yarn and two of cotton piece goods showing 4 and 8 per cent. dyeings of Immedial Indone BN Conc.

Chrome Fast Blue; Berlin Aniline Works, 213 Water St., New York City.

A card showing 3 and 4 per cent. dyeings of the Chrome Fast Blues, B, 4 B, 4 B A, and 6 B A, on woolen piece goods.

Pyrogene Indigo 5 G Pat; A. Klipstein & Co., 122 Pearl St., New York City.

One sample of raw cotton, one of cotton piece goods and twelve of cotton yarn dyed different shades of blue with Pyrogene Indigo 5 G Pat.

Chrome Acid Black; A. Klipstein & Co., 122 Pearl St., New York City.

A sheet showing 5 per cent. dyeings of the Chrome Acid Blacks G, R and B, on woolen piece goods with cotton effect threads.

Gallophenine P; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Three samples of cotton piece goods dyed or printed different shades of blue with Gallophenine P.

Acid Chrome Black T C; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

A sample of woolen piece goods showing a 5 per cent. dyeing with Acid Chrome Black T C and having white striping threads.

Cashmere Black; Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.

Four samples of woolen piece goods dyed with different percentages of Cashmere Black 3 B N and T N. One of the samples has white checking threads which remain perfectly pure.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation Subscription price for the Dyers' Supplement $1.00 per year

Recipe No. 129.

Blue on Woolen Cloth.

Chrome Fast Blue B on 100 lbs. woolen cloth. Prepare the dye bath with

3 lbs. Chrome Fast Blue B.
(Berlin Aniline Wks., 213 Water St., New York City.)
10 lbs. Glauber's Salt.
3 to 4 lbs. Sulphuric Acid.

Enter at 140° F., bring to a boil, and dye at this temperature for one hour. Raise the material, add

3 lbs. Potassium Bichromate

and boil one hour longer.

Chrome Fast Blue B possesses excellent fastness to light and also has good fastness to steaming, ironing, rubbing, stoving, perspiration and carbonizing. The shades are somewhat reddened with ammonia. Its fastness to milling is fairly good. The direct dyeings of this color are red.

Recipe No. 130.

Green on Cotton Yarn.

Immedial Green G G Extra on 100 lbs. cotton yarn. Prepare the dye bath with

14 lbs. Immedial Green G G Extra (first bath).
(Cassella Color Co., 182 Front St., New York City.)
14 lbs. Sodium Sulphide.
5 lbs. Sodium Carbonate.
40 lbs. Common Salt.

Dye at or just below the boil for one hour. The above amounts are for the first dye bath and may be greatly reduced in the second and following dyeings.

Immedial Green G G Extra is especially characterized by its brightness.

Recipe No. 131.

Yellow on Cotton Yarn.

Tetrazo Yellow R G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Tetrazo Yellow R G.
(American Dyewood Co., 154 William St., New York City.)
20 lbs. Common Salt,

and dye at a boil for one hour.

Tetrazo Yellow R G produces a desirable shade of yellow and possesses good fastness to light and acids.

Recipe No. 132.

Black on Cotton Yarn.

Patent Dianil Black F F F Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

3½ lbs. Patent Dianil Black F F F Conc.
(H. A. Metz & Co., 122 Hudson St., New York City.)
1 lb. Soda Ash.
25 lbs. Common Salt.

Be sure that the dyestuff is well dissolved.

Enter yarn at 180° F. and dye at a boil one hour.

Patent Dianil Black F F F Conc. possesses great tinctorial power and better fastness than previous colors of the same type. It can be discharged to a pure white with Hydrosulphite N F.

Recipe No. 133.

Blue on Cotton Yarn.

Chlorazol Brilliant Blue 12 B on 100 lbs. cotton yarn. Prepare the dye bath with

12 oz. Chlorazol Brilliant Blue 12 B.
(Read Holliday & Sons, 7 Platt St., New York City.)
10 lbs. Common Salt.

Enter cold; bring to boil; boil one-half hour. Levels easily.

Recipe No. 134.

Black on Cotton Yarn.

Dianol Black D on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Dianol Black D.
(Thos. Leyland & Co., 53 India St., Boston, Mass.)
30 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Dianol Black D produces a deep shade of black, without bronzing. It dyes very level and is useful in union dyeing. Only two-thirds of the above amount of color is necessary for a standing dye bath.

Recipe No. 135.

Blue on Worsted Yarn.

Criterion Blue G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Criterion Blue G.
(F. E. Atteaux & Co., 174 Purchase St., Boston, Mass.)
5 lbs. Acetic Acid.
20 lbs. Glauber's Salt.

Have yarn well wet out and enter the dye bath at 120° F. Bring slowly to the boil and dye at a boiling temperature for ¾ hour, then add

1 lb. Sulphuric Acid,

boil ½ hour longer and then add

1 lb. Potassium Bichromate.

Boil ½ hour longer and then lift, wash and dry.

Criterion Blue G gives a good fast blue on piece goods or yarn.

Recipe No. 136.

Violet Red on Cotton Yarn.

Brilliant Direct Red 3 B on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Brilliant Direct Red 3 B.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
10 lbs. Common Salt.

and dye at a boil for one hour.

Brilliant Direct Red 3 B is particularly well adapted for the brightening of other direct reds. It dyes very evenly and is fairly fast to washing.

Recipe No. 137.

Brown on Worsted Yarn.

Anthracene Chrome Brown D W on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthracene Chrome Brown D W.
(Cassella Color Co., 182 Front St., New York City.)
10 lbs. Glauber's Salt.
2 to 3 lbs. Sulphuric Acid.

Enter at 120° F., bring to the boil and dye at a boil for one hour, then raise and add

3 lbs. Potassium Bichromate

and boil ½ hour longer.

Anthracene Chrome Brown D W possesses excellent fastness to light, washing and fulling.

Recipe No. 138.

Yellow on Cotton Yarn.

Paranol Yellow G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Paranol Yellow G.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
20 lbs. Common Salt.

and dye at a boil for one hour.

Paranol Yellow G is particularly useful for shading purposes as it dyes evenly and slowly.

Recipe No. 139.

Blue on Woolen Cloth.

Chrome Fast Blue 4 B on 100 lbs. woolen cloth. Prepare the dye bath with

4 lbs. Chrome Fast Blue 4 B.
10 lbs. Glauber's Salt.
(Berlin Aniline Wks., 213 Water St., New York City.)
3 to 4 lbs. Sulphuric Acid.

Enter at 140° F., bring to a boil and dye at this temperature for one hour. Raise the material, add

3 lbs. Potassium Bichromate

and boil one hour longer.

Chrome Fast Blue B possesses excellent fastness to light and also has good fastness to steaming, ironing, rubbing, stoving, perspiration and carbonizing. The shades are somewhat reddened with ammonia. Its fastness to milling is fairly good. The direct dyeings of this color are red.

Recipe No. 140.

Green on Cotton Yarn.

Thiogene Green B L Extra on 100 lbs. cotton yarn. Prepare the dye bath with

13 lbs. Thiogene B L Extra. (This is for first bath. It may be reduced to 9/10% in second bath.)
(H. A. Metz & Co., 122 Hudson St., New York City.)
15 lbs. Sodium Sulphide.
4½ lbs. Soda Ash.

Enter yarn at 190° and dye at a temperature just below the boil for one hour.

Thiogene Green B L possesses very good fastness and particular attention is called to the brightness of the green produced.

Recipe No. 141.

Red on Woolen Yarn.

X L Eosine B S on 100 lbs. woolen yarn. Prepare the dye bath with

2 lbs. X L Eosine B S.
(Read Holliday & Sons, 7 Platt St., New York City.)
10 lbs. Glauber's Salt.
3 lbs. Oil Vitriol.

Enter cold; bring to boil; boil ½ to ¾ of an hour, when bath should be exhausted. Levels easily.

Recipe No. 142.

Indigo Blue on Cotton Yarn.

Katigen Indigo Blue C L Extra on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Katigen Indigo Blue C L Extra.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.)
10 lbs. Sodium Sulphide Crystals.
5 lbs. Soda Ash.
20 lbs. Common Salt.

Enter yarn at 190° F. and dye just below a boil for one hour, keeping the material below the surface of the liquor as much as possible.

The above amounts are for the first dye bath.

To produce the same color in a standing bath, the following amounts only are necessary:

6 lbs. Katigen Indigo Blue C L Extra.
6 lbs. Sodium Sulphide Crystals.
2 lbs. Soda Ash.
5 lbs. Common Salt.

Katigen Indigo Blue C L Extra possesses the unusual property of good fastness to chlorine. Its shade resembles indigo, although slightly greener. Its fastness to washing, cross dyeing and light is excellent.

Recipe No. 143.

Scarlet on Worsted Yarn.

Ponceau H P on 100 lbs. worsted yarn. Prepare the dye bath with

1½ lbs. Ponceau H P.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York City.)
15 lbs. Sodium Bisulphate.

Dissolve the dyestuff by stirring to a paste with cold water and then adding boiling water.

Enter at 180° F., and dye at a boil for one hour.

Ponceau H P goes on the fibre easily, penetrates thoroughly and is recommended chiefly for the dyeing of flannel.

Recipe No. 144.

Black on Worsted Yarn.

Era Black V on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Era Black V.
(Thos. Leyland & Co., 53 India St., Boston, Mass.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter cold, raise to the boil, boil ¾ of an hour, then clear the bath by adding

1 lb. Sulphuric Acid.

When clear, add

1½ lbs. Potassium Bichromate

and boil 20 minutes longer.

Era Black V is very fast to light and milling and exhausts well, and gives a clean dye bath. It dyes level and gives rich, purple blacks.

Cosmos fibre, first manufactured near Brussels, and recommended as a substitute for cotton and wool, is made of residues from linen, hemp and jute.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Connecticut, Plainfield. Ground has been broken for the new plant to be erected by the Lawton Manufacturing Company. The mill will have capacity of 30,000 spindles. Fancy cottons will be made.

*Connecticut, Plainfield. The Lawton Manufacturing Co. has been organized, with capital stock of $250,000, and will erect a new mill at this place. The main building will be 225 by 100 feet, three stories, brick. A weave shed, 250 by 150 feet, one story, will also be built. Steam will be motive power. Harold Lawton, formerly at the Baltic Mills, is interested.

*Connecticut, Manchester. Additions will be built to the Eastern Biscuit Co.'s plant, recently reported purchased by other parties for manufacturing fine wash cotton goods, viz: Zephyrs, madras and mercerized cotton. The capital stock, $125,000, has been fully subscribed. Plant will be equipped with 350 new looms. It is expected that operations will begin in about six weeks. As previously reported, Sam Hird will be superintendent of the plant.

Georgia, Griffin. The Central Cotton Mills have been incorporated with a capital of $100,000. A building has been secured and 125 looms will be put in operation on high grade cottons. W. H. Newton, Allan Little, J. J. Mangham and others are mentioned as interested.

*Massachusetts, Fall River. The new brick mill of the Fall River Iron Works Co. is nearing completion. This mill has four stories and basement, 300 by 142 feet, and will be equipped with 90 Platz cards, 2,000 looms and 70,000 spindles. This additional machinery will give them 452,312 spindles, Making them the largest mill in this respect in the country, if not in the world. They turn out 40 miles of cloth every hour and employ 5,000 hands.

*Massachusetts, New Bedford. Work on the new mill of the Beacon Mfg. Co. will be begun as soon as plans are completed. It will be a one-story building, 400 by 150 feet, estimated to cost $200,000. They expect to start operations early in June.

*Mississippi, Meridian. It is reported that arrangements are being made by the Beatrice Cotton Mills for awarding contracts of buildings and installing new machinery. Although the plant will be built to accommodate 20,000 spindles and 600 looms, operations will probably start with smaller equipment. L. Cohen is general manager.

New Jersey, Gloucester. The Gloucester Braiding Co. has recently started up its plant for the manufacture of plain and fancy braids. The main office of the company is located at 1102 Real Estate Trust Building, Philadelphia, where all the buying for the concern is done. They are in the market for a few second-hand braiders.

North Carolina, Belmont. Preparations are being made to begin at once on the construction of a 10,000-spindle cotton mill. It is to be built by the officers and stockholders of the Chronicle Cotton Mills, organized under the title of the Imperial Yarn Mills, with a capital stock of $125,000. The product will be fine yarns, 40, 50 and 60.

*North Carolina, Greensboro. Work has been started on construction of a new building for the Pomona Cotton Manufacturing Co., recently reported incorporated. Lee H. Battle is president and treasurer of the company and A. L. Bain superintendent. It has not definitely been decided what will be made, but probably it will be white cotton goods. Plant will be equipped with 10,000 spindles. The above company will take over the property of the Etowah Cotton Mill, in which W. I. Young was mentioned as actively interested.

Pennsylvania, Philadelphia. Messrs. Thompson & Hallowell on October 1st will start up a plant with 40 looms on upholstery goods, chenille and tapestry table covers and curtains in the Hoyle, Harrison & Kaye Mills at Indiana Ave. and A Sts. The production is to be sold direct.

Tennessee, Nashville. The Tennessee Cotton Manufacturing Co.'s plant has been purchased by a syndicate of capitalists who will operate same after the present lease of the plant expires. Mill No. 2 is to be operated as a cotton mill, with 22,000 spindles and 500 automatic looms. A new company will be organized, with capital stock of $500,000; W. R. Odell is to be president of the company and J. B. Morgan secretary and treasurer. No. 1 mill has been secured by Morgan & Hamilton, who will occupy same, manufacturing sacks and bags.

*Texas, Denison. The Denison Cotton Mill Co. will start operations in October, making 8s to 14s 2 ply yarn in skeins. Company has capital stock of $150,000; W. B. Munson is president of the company; W. R. Munson, treasurer and T. L. Clark, superintendent. Plant is equipped with 8,000 ring and 4,000 twister spindles and operated by steam. This company, which has purchased the plant formerly known as the American Spinning Co. will install considerable new machinery in the mill.

Enlargements and Improvements.

*Alabama, Uniontown. Machinery for the previously reported addition to the Ella White Cotton Mills has been installed and will begin operations September 1, with 10,000 spindles.

Alabama, Huntsville. The Huntsville Cotton

Mill Co. has closed the mill for purpose of overhauling the machinery. New boilers will be put in.

Connecticut, New Haven. The New England Warp Company have completed a one-story addition to their plant.

Connecticut, Uncasville. The Uncasville Manufacturing Company is setting up a 3 h. p. electric motor in the roll covering department.

Connecticut, Wauregan. The Wauregan Co. is installing 40 new cards and 20 new speeders in Mill No. 2.

Connecticut, Willimantic. The M. Pollock Co. is installing an electric generator in the mill.

*Georgia, Atlanta. The Exposition Cotton Mills have completed the erection of their new building. It is two stories in height, 100 by 275 feet and with the installation of 8,000 new spindles and other machinery will cost $150,000.

*Georgia, Atlanta. The Exposition Cotton Mills have started operations in their new addition, which has been equipped with 8,000 new spindles and 200 looms.

Georgia, Columbus. The Eagle and Phenix Cotton Mills are installing a large quantity of new machinery, among which are 428 Crompton and Knowles looms.

Georgia, Columbus. The Hamburger Cotton Mills are to install 500 new looms in the plant.

Georgia, Columbus. A four-story addition is to be built to the Swift Manufacturing Co.'s plant. They will add 5,000 new spindles in the new addition, which, when completed, will give them a total of 20,000 spindles. The plant is to be operated by electricity and steam.

Georgia, Lindale. It is reported that the Massachusetts Mills in Georgia have started work replacing 1,000 of their old looms with new Draper automatic looms. One hundred of the looms have already been received.

Illinois, Chicago. The Opaque Shade Cloth Co. is to erect a new plant at corner Peoria and West 121st Sts., West Pullman.

*Massachusetts, East Webster. The new addition being built to the Slater Cambric Works will be 330 by 35 feet, two stories. New machinery will be installed as soon as possible.

*Massachusetts, Fall River. The Estes Mills have recently installed 100 sash cord braiders for the manufacture of sash cord. A rope walk, 550 feet long, for making hand laid lines and cords is now being erected, the size of the head house being 30 by 50 feet.

Massachusetts, Fitchburg. The Grant Yarn Co. is to build a new power house, 41 by 22 feet, one and one-half stories.

Massachusetts, Fitchburg. The Parkhill Manufacturing Company has started work on erection of an addition to Mill C. The building will be two stories high. About 100 new looms will be installed.

*Massachusetts, Lawrence. The Arlington Mills will install about 1,500 new looms in the new weave shed reported to be built in connection with dye house, power house, etc.

Massachusetts, Lancaster. The capacity of the Lancaster Mfg. Co. will be doubled by the erection of its new addition, 200 by 62 feet. For twelve years it has run night and day with the exception of Sundays and holidays.

Massachusetts, Lowell. The Boott Cotton Mill expects to install some new machinery in the course of a few weeks. They are now running with a force of 1400 operatives.

Massachusetts, New Bedford. Plans have been prepared for a weave shed, one story, for the Hathaway Mills.

Massachusetts, New Bedford. A brick addition, 27 by 41 feet, two stories, will be built to the office of the Acushnet Mills.

*Mississippi, Magnolia. The equipment of the addition to the Magnolia Cotton Mills is now completed, making a total of about 10,000 spindles and 264 looms with a daily output of 15,000 yards of 3.60 and 4-yard sheeting.

*New Hampshire, Manchester. Work is underway on the building of a large dyehouse for the Manchester Mills, and it is expected will be completed in about two months.

*New Hampshire, Nashua. It is expected that the new cloth room building under construction for the Nashua Manufacturing Co. will be ready for installation of machinery the latter part of September.

New York, Pleasant Valley. The Pleasant Valley Cotton Mill is being thoroughly renovated.

North Carolina, Asheville. Work on installing electric power plant in the Asheville Cotton Mills has begun and within the next six months it is expected the entire plant will be operated by electricity. New machinery will also be added, including spinning frames and 32 revolving flat top cards to take the place of the old-style cards now running.

North Carolina, Lexington. The output of the Nokomis Cotton Mills will be increased about 20 per cent. by the addition of new machinery, consisting of cards, spinning frames and looms.

North Carolina, Lincolnton. The Daniel Mfg. Co., spinning fine numbers of combed yarns from Sea Island Cotton, are to install 2,100 additional spindles, making the total equipment about 10,000.

North Carolina, Tarboro. E. V. Zoeller, treasurer of the Tarboro Cotton Mills, announces that contracts are soon to be let for the work and machinery for changing the present systems of heating and water supply.

New York, Lockport. A large addition, 50 by 75 feet, two stories, is being built to the Niagara Textile Co.'s plant.

North Carolina, Albemarle. The Efird Manufacturing Co. is reported as contemplating doubling the capacity of its mills and installing additional looms.

North Carolina, Asheville. The Asheville Cot-

ton Mill has been equipped with electricity, furnished by the W. T. Weaver Power Co.

*North Carolina, Clayton. The Clayton Cotton Mills expect to have their new addition, with machinery, in operation by December. This company makes yarns, 20/2 warps, 16 and 20s skein and ply.

Mills Shutting Down.

New York, Newburgh. The Newburgh Steam Mills have been closed for an indefinite time. It is stated that high price of cotton and condition of the cotton market is reason for shut down.

WOOLEN.

New Mills.

*Connecticut, Rockville. Contract has been let for erection of the new mill for the J. J. Regan Manufacturing Co. The plant will be four stories high, 101 by 72 feet, brick.

Delaware, Wilmington. The Seamless Rug Co., with a capital of $250,000, has just received its incorporation papers. The members of the company are all located in Philadelphia, Pa., where it is understood they will conduct their operations. It is their intention, as their name implies, to manufacture seamless carpets and rugs.

*Maine, Guilford. Work is being pushed on the new brick mill of the M. L. Hussey Woolen Co., and they expect to start operations for the manufacture of ladies' dress goods and cassimeres early in the fall.

*Massachusetts, Auburn. James Hilton has leased the mill of the Worcester Rendering Company at Trowbridgeville, where he will manufacture mill and bedding stock.

*New Jersey, Camden. Eavenson & Levering will start operations about October 1st on commission combing. The plant will be equipped with 2 cards and 3 combs, with necessary gilling.

New Jersey, Garfield. Ground has been broken for the new plant of the New Jersey Worsted Spinning Co. There will be ten buildings in all with a floor space of about half a million square feet. The building will cost about $300,000 and the machinery $700,000. The contractors expect to have the building completed about February 1.

New York, Amsterdam. The rug manufacturing firm of McCleary, Wallin & Crouse are soon to erect a new mill to accommodate their rapidly increasing business. The new mill will cost about $100,000, and be equipped with the most modern machinery for the manufacture of tapestry Brussels.

*Pennsylvania, Philadelphia. Messrs. McCoy & Thompson have purchased a shoddy plant at Chester, which they will remodel for their wool-washing and combing plant.

South Carolina, Columbia. Contract for the erection of the new plant of the American Press Cloth Company has been awarded and the plant is expected to be in operation inside of three months. The company is capitalized at $50,000 to manufacture press cloth from camel's hair. There are but three other manufactories of the kind in the country.

Enlargements and Improvements.

Canada, Quebec, Almonte. The Rosamond Woolen Company is installing four sets of cards in the plant.

Connecticut, Baltic. The general contract for the erection of the new three-story frame addition to the Shetucket Worsted Mills has been awarded. The plans call for a structure 75 by 110 feet with gravel roof.

Connecticut, Mechanicsville. The French River Textile Company is erecting a new dye house, 25 by 90 feet.

Connecticut, Rockville. An addition, 180 by 60 feet, four stories, is under construction to the Hockanum Co.'s mill.

Connecticut, Rockville. The American Mills Company is to erect a new picker house, 40 by 70 feet, two stories high.

Illinois, Ipava. The capacity of the Sparta Woolen Mills, C. F. Foote proprietor, has been increased by the addition of new machinery.

Maine, Dover. The Brown Mills of the American Woolen Company are to replace eight sets of cards with eight sets of 48 inch D. & F. cards.

Maine, Foxcroft. An addition, 50 by 40 feet, two stories, is to be built to the weave room of Mayo & Co.'s mill. They will install 18 new looms when completed.

*Maine, Lewiston. The Columbia Mills advise us that they are building a new boiler house and chimney and will install two horizontal boilers, 66 by 18 feet. They are also building an addition to the finishing room.

Maine, Lewiston. Extensive changes and improvements are being made at the Columbia Mill. Work is now under way on the erection of a new chimney, 100 feet high, and a new boiler house, which will be equipped at first with two 125 h. p. boilers, but large enough for three boilers. The dry house has been moved to make way for the boiler house. Work will be done so as not to interfere with the operation of the plant. When completed, the capacity of the plant will be increased three times that of the present.

Maine, Oakland. The Oakland Woolen Co., which has been making some small additions to the plant, contemplates installing before October 1 10 Crompton & Knowles looms.

Maine, Sanford. An extension is being built to the Goodall Worsted Co. Five new 150 h. p. boilers will be installed.

Maine, Skowhegan. The Marston Woolen Mills are to be enlarged with an addition, 82 by 22 feet. The pattern looms and perching department will be moved into the new addition leaving space in the main building for 16 additional looms, which will be added. This will then give them a total of 96 broad looms.

Massachusetts, Auburn. James Hilton, manufacturer of shoddy, has leased the Home & Seaton

Mill at Trowbridgeville and after making needed repairs, will put same in operation to meet demand for goods.

Massachusetts, Fitchburg. The Star Worsted Co. is to build a two-story brick addition to the mill, for purpose of enlarging the wool scouring and sorting departments. Some additional machinery will be put in.

Massachusetts, Gilbertville Work has been started on an addition to the Geo. H. Gilbert Manufacturing Company's wool-sorting plant. The addition will be about 100 feet square, brick, and the building will be raised one story. The weaving department of the plant is being operated nights.

Massachusetts, Holyoke. The dye house of the Farr Alpaca Company is being rebuilt and enlarged.

Massachusetts, Hubbardston. The new dye house for the Hygienic Blanket Co. will be equipped with six dye vats. It is proposed having same completed by Sept. 1.

Massachusetts, Indian Orchard. The Rhode Island Worsted Co. have been obliged to install several new looms to meet the demand for their product.

*Massachusetts, Lowell. It is expected that the new mill for the Bigelow Carpet Co., under construction, will be completed by the middle of October.

Massachusetts, North Oxford. The Huguenot Mills Company has installed four new card machines.

Massachusetts, Pittsfield. Three new spinning frames have been installed in the Taconic Mills.

*Massachuusetts, Uxbridge. The new 60-foot brick addition to the C. A. Root Co.'s mill is to be still further enlarged by 52 feet additional, making it 112 feet in all.

Michigan, Clinton. A large addition is being built to the Clinton Woolen Manufacturing Company's plant.

New Hampshire, Rochester. A spinning mule has been installed in the Rochester Woolen Company's mill.

New Jersey, Trenton. Plans have been accepted for a new four-story addition, 46 by 70 feet, to the Colonial Woolen Mills. This increased space will necessitate about 100 more employes.

North Carolina, Charlotte. It is reported that the Southern Cotton Oil Co. is to make important additions and improvements to its plant within the next few months. The first step will be the erection of a bleachery.

*Pennsylvania, Chester. McCoy & Thompson, successors to Jackson & Thompson, wool scourers, carders and combers, are remodeling the Lees shoddy mill, recently purchased. Their specialty is commission combing and top making and their equipment will include four combs on the Bradford system. Work is being pushed and operations will be started as soon as possible.

Pennsylvania, Philadelphia. John and James Dobson are to erect a $12,000 addition to the Dobson Mills.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

New Jersey, Paterson. The Aronsohn Bros.' Silk Co. has been incorporated with capital stock of $25,000. Among the incorporators are Samuel J. Harry, Charles J. Ward and William and Bernard Aronsohn.

New Jersey, Passaic. The Argyro Silk Mills, with office in Silk Exchange building, New York, have started a plant here.

New Jersey, Paterson. Contracts have been awarded for work on the new Todd Mill of the Manhattan Silk Company, and it is hoped to have the plant in operation by the first of December.

*New York, Canisteo. Work has been started on installation of machinery in the Canisteo Silk Mill. Plant is equipped with electricity.

*Pennsylvania, Bangor. The new mill for the Bangor Silk Co., which is to start operations about November 1, will be two stories in height, 123 by 43 feet. The officers of the company are W. R. Thomas, Jr., president, A. S. Baker, vice president, and Andrew Eyer, secretary and treasurer.

Pennsylvania, Philadelphia. The Killin Silk Co., with a capital of $100,000, who are operating a plant on plain and fancy dress silks at Little Falls, N. J., have started up a branch establishment in the old Godshalk Mills at 24th and Hamilton Streets, where they are operating 50 looms on broad silks under the superintendency of Frank L. Hicks. The new plant is working day and night.

Pennsylvania, Philadelphia. Messrs. S. & A. Posner, under the name of S. A. Posner & Co., have recently started up a plant for the manufacture of broad silks in the building at the N. W. corner of American and Diamond Streets, where they are operating 2 winders, 2 spoolers, 2 warping mills and 20 broad looms. They are doing a good business and sell their production direct.

Pennsylvania, Philadelphia. Among the new concerns recently started in this city is the Philadelphia Winding Co., located in the Empire Mills, Kensington Avenue and Huntingdon Streets. They are operating 5 winders, 1 reel, 1 quiller and 1 Foster coning machine on fine yarns. John Fowler is manager and reports business good.

*Pennsylvania, Bangor. W. R. Thomas, Jr., is president of the Bangor Silk Co., which has let contract for erection of the new buildings. A. S. Baker, vice president and Andrew Ayre, secretary and treasurer.

Enlargements and Improvements.

Connecticut, South Manchester. Cheney Bros. have let contract for erection of a new dyehouse. The building will be 225 by 61 feet, two stories, brick. It is expected to have same completed this fall.

Connecticut, Warehouse Point. Work has been completed putting in new boilers and other general repairs in the Warehouse Point Silk Co.'s mill.

Connecticut, Rockville. E. J. Martin's Sons are to build a new boiler house, 50 by 30 feet.

Connecticut, Hartford. Plans are being prepared for a two story new brick and stone factory building, 82 by 140 feet, for the Windham Silk Co. Bids will be invited about September 1.

Pennsylvania, Hamburg. The Hamburg Silk Mill Co. are to convert their storage room on the east side of the building into a warping and winding department and will also install 20 new looms.

*Pennsylvania, Carlisle. We have been advised by the York Silk Mfg. Co. that they are not installing any looms in the Carlisle plant, but are putting in about 6,500 more spindles.

*Pennsylvania, Allentown. The new silk ribbon mill of the Phoenix Silk Manufacturing Co. is well under way. It is possible that the building, which is to be three stories, may be increased to four. The boiler and engine house, one story, has been finished.

*Pennsylvania, Carlisle. New looms are being installed in the Carlisle Silk Mill.

Mills Shutting Down.

New York, Sidney. The silk mills of the Clark Textile Co. have been shut down for two weeks for repairs.

Pennsylvania, Littlestown. Operations have been suspended in the Littlestown Silk Mill. It is not known when work will be resumed.

FAILURES AND SUSPENSIONS.

*Massachusetts, Westfield. The entire plant of the Planet Mfg. Co. has been sold by the receiver, Daniel E. Webster, to Charles E. Hickson for $500.

New York, Norwich. John Erskine & Co., owners of the Norwich Silk Mills, have made an assignment to Howard D. Newton for the benefit of the creditors. The assets are placed at about $222,000 with secured liabilities of $74,000 and unsecured $96,000. The mills are still in operation.

New Jersey, Paterson. The Charles A. Cooper Co. has made an assignment for the benefit of its creditors. The assets of the concern are estimated at $3,978.29, with liabilities of $3,522.16.

New York, Brooklyn. Lee Oppenheimer has been appointed receiver in bankruptcy of the American Knit Goods Manufacturing Co., whose plant is at Wythe Ave. and Pennsylvania street. This company was incorporated with capital of $1,550,000 to succeed Baron, Strauss & Co. The liabilities of the company are reported to be about $400,000.

Pennsylvania, Schuylkill Haven. The personal property of the Columbia Dye Works has been purchased at sheriff's sale by M. J. Fleming of Trenton. The bleaching machinery and everything necessary for the carrying on of the work will be sold September 9.

FIRES.

Connecticut, Woodbury. Fire, which started in the picker room, destroyed the Daniel Curtis Sons' plant.

New Jersey, Camden. Automatic fire sprinklers that had just been installed in the mill of Loeb & Schoenfeld Co., Front and Pearl Streets, prevented a serious fire. The concern manufactures laces and fancy embroideries operating 50 looms and 200 sewing machines. The loss is estimated at $7,000, which was fully covered by insurance.

Ontario, St. Catherine's. The Garden City Knitting Mill, owned by W. E. Channel, has been completely destroyed by fire. The loss is estimated at $3,000.

Pennsylvania, Philadelphia. The Ontario Mills have been damaged by fire, causing loss of about $4,000. This building is occupied by Rodgers & Co., manufacturers of chenille goods; Wright, Centre & Saile and Henry Barth, carpet manufacturers.

Pennsylvania, Philadelphia. Fire in the room occupied by William Rogers & Co., manufacturers of chenille, tapestry, silk and mercerized curtains, covers and piece goods on twenty looms, a tenant in the mill of the Ontario Spinning Co., 1720 North Second street, damaged the plant to the extent of $4,000. Several other tenants, all manufacturers of carpets, had their plants more or less damaged by water, the fire being confined to the fourth floor, occupied by Rogers & Co. The damage will be repaired at once.

FACTS AND GOSSIP.

*Canada, Paris. The Penman Manufacturing Company, Ltd., advises us that they are not yet prepared to make any statement regarding the proposed addition to the mill. They are, in the meantime, erecting a new warehouse.

Connecticut, Clark's Falls. The Clark's Falls Felting Co. is operating the plant to its full capacity.

Connecticut, Manchester. A New York concern has purchased the Eastern Biscuit Co.'s plant, which has been for sale for some time, and will operate same manufacturing textile goods. Machinery has been ordered and will be installed in about six weeks. Samuel Hird will be general manager of the new concern.

*Connecticut, New Hartford. The Greenwoods Mills of the Mt. Vernon Woodberry Cotton Duck Co. are being dismantled and the machinery shipped to their mills in the South.

*Connecticut, Norwich. We have been advised by the Norwich Silk Co. that they are repairing damage done to the machinery by a recent explosion, and will be in operation as soon as it is possible to instal a new boiler. Aside from the boiler, they will not be obliged to purchase any new machinery.

*Connecticut, Woodbury. We have been advised by Daniel Curtiss' Sons that they have not yet fully decided about the rebuilding of plant re-

cently destroyed by fire. The loss on building is estimated at $15,000 and $20,000 on stock. They had recently installed about $10,000 worth of new machinery.

Connecticut, Springville. The mud drum of the boiler at the Springville Manufacturing Co.'s plant blew out previous to mill's start working for the day. The boiler was damaged and all windows in the building shattered. It is probable that all the boilers, which were more or less damaged, will be replaced with new ones.

*Georgia, Watkinsville. We have been advised by A. W. Ashford & Son that as soon as the balance of the necessary stock is secured, they will be ready to proceed upon the new plant.

Georgia, Americus. It is reported that the Chamber of Commerce in this place is in communication with Connecticut capitalists in regard to establishing a cotton mill here.

Georgia, Carrolton. At the recent annual meeting of the directors and stockholders of the Mandeville Mills it was voted to increase the capital stock by $40,000.

*Iowa, Decorah. The Union Fibre Co., whose plant at Freeport was destroyed by fire recently, has purchased land and will build plant here.

Kentucky, Paducah. The Dixie Mills Co. has been incorporated with capital stock of $100,000, and will take over the plant formerly operated as the Alden Knitting Mills. Robert Phillips is president of the new company, Geo. C. Wallace vice-president, T. L. Upton treasurer and Geo. Phillips secretary.

Maine, Camden. At the annual meeting of the Knox Woolen Co., Joshua Adams was elected president; C. W. Babb, treasurer and superintendent, and J. F. Coombs, clerk.

Maine, Oakland. The Oakland Woolen Co. has started operating the mill with a night force.

Manitoba, St. Boniface. Upon investigation it is learned that the report concerning establishment of a large dye plant here is erroneous.

Massachusetts, Athol. The blanket mill of the Miller's River Mfg. Co., which has been running shorthanded for the last two months, is now running full in all departments.

Massachusetts, Becket. Machinery has been started in the new mill of the Becket & Berkshire Silk Co.

*Massachusetts, Easthampton. The new firm recently incorporated to do a merecerizing and specialty weaving business is to be known as the Nashawena Company, of which E. J. Brown of New York is president, and J. B. Richards, also of New York, is treasurer and general manager. The company is capitalized at $75,000.

Massachusetts, Easthampton. It is reported that the King mill has been leased by New York parties who will start a plant for mercerizing. Later on it is thought looms will be installed for manufacturing mercerized goods. It is thought that operations will start early in the fall.

Massachusetts, Fall River. J. H. Estes & Sons have incorporated their business as the Estes Mills, with capital of $250,000. John H. Estes is president of the company and J. Edmund Estes, treasurer.

*Massachusetts, Franklin. Arrangements are being made for starting up the plant of the Worcester Textile Mill about Sept. 1. It is proposed to operate the plant to its full capacity on towels.

Massachusetts, Franklin. It is reported that the water rights of Box Pond have been purchased by a New York syndicate who will build a woolen mill or a factory for the manufacture of mattresses.

Massachusetts, Middleboro. The Farwell Worsted Mills, which have been running short time and only using half the loom equipment, will soon start operations with full equipment. Fine grade serges and fancy worsteds will be made.

Massachusetts, North Brookfield. The Indian Orchard Flax Co. is to remove the plant to this place where suitable quarters have been secured. For the present power will be leased, but the company contemplates eventually establishing an electric plant in the mill.

*Massachusetts, North Adams. The plant of the Windsor Print Works, including the Eagle Mill, has been sold to a syndicate for $235,500, the lowest price fixed by the court. The total amount realized from the sale was $375,000. It is reported that the syndicate, the members of which are not yet known, will start the works in about six weeks. They have been closed since December 27.

Massachusetts, Pittsfield. Steps have been taken for the incorporation of the Adams Woolen Company, which will operate the old Graham & Clark woolen mill at Maple Grove and the Johnson-Dunbar plant at North Adams. They expect to employ about 200 hands.

Massachusetts, Webster. Performing by machinery the work of eleven operatives in the hacking room of the Stevens Linen Works, has effected a saving in the payroll of about $25 a day.

New Jersey, Hoboken. The Stark Manufacturing Co. has been incorporated with capital stock of $25,000, to manufacture embroideries, trimmings, laces, etc. Louis Stark, E. M. Crook and Richard W. Woodburn of Rutherford are interested.

*New Jersey, Paterson. The temporary building for the Granite Linen Co., whose plant at Wortendyke was destroyed by fire, is about completed. The machinery, etc., is being installed.

*New York, Gouverneur. The report that has been published in a number of papeers to the effect that the International Lace Mfg. Co. were about to move their branch mill to New York, has been very strongly denied by the company officials themselves. They report that their entire plant is located at Gouverneur and that they have no branch mill anywhere nor do they expect to have. They report their business is a very satisfactory condition.

New York, New York. The American Tracing Cloth Company has been incorporated with capital stock of $150,000 for purpose of manufacturing tracing cloth, gray goods and bleaching materials.

Wm. S. Gordon (45 West 133d Street) and Henry L. Cohen (137 West 129th Street) are interested.

*New York, Seneca Falls. We have been advised that the report that the Seneca Woolen Mills would resume operations the first of September is erroneous. Plans for reorganization have not yet been begun.

New York, Utica. H. D. Pixley & Son Co. has been incorporated to manufacture textile fabrics. Capital stock is placed at $100,000. Henry D. Pixley, Geo. W. Pixley and William E. Lewis are interested.

*New York, Clayville. The machinery at the Empire Woolen Mill, which has been closed for some time, has been sold to J. Francis Day of Utica, who bid it in for Robert A. C. Smith, the execution creditor.

New York, Jamestown. The Chatauqua Worsted Mills have been incorporated with capital stock of $200,000, to continue the plant of the Chatauqua Worsted Mills, hitherto operated under a partnership. The incorporators are Fletcher and Herbert J. Goodwill and Wm. T. Falconer.

North Carolina, Randleman. S. G. Nowlin and S. Bryant, owners of the Naomi Falls Mfg. Co., have bought the property of the Randleman Mfg. Co., including the Plaidville Mills, the Marie Antoinette Mills, and the Randleman Mills. These three plants have a total of 10,000 spindles and 718 looms, making colored cottons.

North Carolina, Spray. It is reported that a new textile concern, known as the Japanese-American-Japanese Co., has been formed with a capital of $1,000,000. Arthur J. Draper, George W. Franker and F. Frank Mebane are reported as interested, with headquarters at this place.

North Carolina, Statesville. J. C. Steele & Sons are in the market for new or good second hand cotton rope machinery, to manufacture 1,000 pounds of five-eighths-inch rope per day.

North Carolina, Cherryville. H. F. Schenck of this place is reported as interested in organizing a company to build another cotton mill.

North Carolina, Stanley. The Carpenter Manufacturing Company has been incorporated with capital stock of $25,000 for purpose of manufacturing cotton batting and mattresses. J. G. and R. E. Carpenter are interested.

North Carolina, Statesville. It is reported that J. C. Steele & Sons are considering purchase of new or second hand cotton rope machinery.

Pennsylvania, Philadelphia. The executors of the estate of the late Thomas Lawlor, manufacturer of woolen and cotton goods at 2813 North American Street, will sell out the plant at public auction on August 29th. The plant, which has been shut down since Mr. Lawlor's death, contains 28 narrow and 2 art square looms, bobbin, winding, spooling and beaming frames, warping mill, winding machine, etc.

Pennsylvania, Norristown. The Art Fibre Co., which started up in the business of manufacturing artificial silk at the southeast corner of Randolph street and Columbia avenue, Philadelphia, is removing its plant to this town, where they have purchased the old tack factory, consisting of an "L" shaped building two and three stories high, on the line of the P. & R. Railway. The main omce of the company will be continued in Philadelphia at 1017 Race street. The officers are: H. Bernstein, president and buyer; Russell Murray, treasurer, and Clement H. Scheibner, superintendent. The production is sold direct at 100 Grand street, New York.

Rhode Island, Anthony. The Coventry Co. is to increase capacity of the cotton storehouse and will build an additional story for that purpose.

*Rhode Island, Woonsocket. The New England Edging Company has not yet rebuilt or started the mill destroyed by fire.

*Rhode Island, Enfield. The Enfield Mills, recently sold at public auction, were purchased by William J Dunn of the Seaside Mills, at Fall River, for $15,000. Other parcels of village property which were a part of the mill plant were also sold and brought the total amount realized on the sale up to $20,617.50.

Rhode Island, Ashaway. It is reported that the Bethel Worsted Mill, which is fully equipped for making fancy worsteds, is offered for sale.

South Carolina, Florence. The Board of Trade is considering a project under way for erecting a cotton mill at this place. A committee has been appointed to make investigations and solicit subscriptions. Among those interested are H. S. Rose, J. M. Timmons and J. F. Muldrow.

South Carolina, Cheraw. It is reported that Leroy Springs of Chester is interested in building a cotton mill here, provided certain conditions are carried through.

South Carolina, Anderson. The Hatton Shoals Power Company has been incorporated with capital stock of $150,000 to develop power. Work will soon start on erection of dam and power house. R. S. Ligon (Anderson) is president of the company, which will supply electric power to a number of the mills in the vicinity.

*South Carolina, Cheraw. We have been advised by Leroy Springs that the report concerning his being interested in establishing a cotton mill here is erroneous; neither is any such project contemplated.

South Carolina, Columbia. A meeting will be held Aug. 26th by the directors of the Olympia Cotton Mills Co. to consider further increasing the capital stock to $3,000,000.

South Carolina, Gaffney. It is reported that W. M. Webster, formerly secretary of the Gaffney Cotton Mfg. Co., is reported as interested in organizing a new company to build a cotton mill.

Tennessee, Crossville. It is reported that Geo. B. Johnson is interested in corresponding with builders of wool scouring machinery.

Tennessee, Shelbyville. The Reliance Cotton Company has been incorporated with capital stock of $100,000. W. M. Black, B. B. Harvey and W. W. Barbour are among the incorporators.

Personals.

Cotton.

The overseers in the Gainesville Cotton Mills, Gainesville, Ga., are the following: Superintendent, M. G. Stone; carder, J. A. Sorrells; spinner, J. C. Edwards; weaver, W. S. Smith; cloth room, J. S. Collier; c. engineer, J. M. Stewart.

Alfred Burns, designer for the Danielson Cotton Co., Danielson, Conn., has resigned.

Ralph Abbott of Franklin, Mass., has resigned his position as loom fixer in the finishing room to accept a position in a mill at Westvale, Mass.

W. H. Kingsley, overseer of weaving, warping and slashing for the Totokett Mill, Versailles, Conn., has resigned to accept a position as overseer of weaving in a mill at New Bedford, Mass.

A. H. Gulliver who since last January has been superintendent of the Somerset Co. Mills, Valley Falls, R. I., has resigned. Mr. Gulliver was formerly assistant superintendent of the mills of the Lonsdale Co. going from there to the Boston Mfg. Co., Waltham, Mass.

Clarence Stone has succeeded Jos. Harold as boss weaver at North Scituate, R. I.

James Sheppard has been engaged by W. J. Dickey & Sons as manager of the Oella Mills, Oella, Md.

D. W. Stimson has resigned his position as overseer of ring spinning at the Gosnold Mill, New Bedford, Mass.

Geo. Stevens has accepted the position as section hand in the duck mills at Lawrence, Mass.

D. H. Shirley, overseer of ring spinning for the B. B. & R. Knight Mill, White Rock, R. I., has resigned, to accept a position with the Windham Mfg. Co., Willimantic, Conn.

L. W. Powers, for eight months superintendent of mill No. 1 of the New York Mills Co., Utica, N. Y., has been appointed general superintendent and will have actual supervision of the Nos. 1, 2, 3 and 4 mills. Gilbert Broome, who has been superintendent for several months, will succeed Mr. Powers as superintendent of mill No. 1.

Peter McFarlane of Easthampton, Mass., has accepted the position as dyer and bleacher at the Continental Web Co., Bridgeport, Conn.

George Bills, overseer of carding for the Lonsdale Co., Lonsdale, R. I., has resigned on account of ill health.

Benj. Foster, for the past five years with the Stevens Mill, Fall River, Mass., has resigned to accept a similar position in the South.

Alfred Holmes, overseer of carding for the Somerset Co., Valley Falls, R. I., has resigned and has accepted a similar position with Luther Mfg. Co., Fall River, Mass.

George S. Harris has accepted the position as general manager of the Gate City Mills, Atlanta, Ga., and will take charge of their plant on Oct. 1. Mr. Harris leaves Seymour, Ala., for a week's vacation through New England, and will return the latter part of September. C. S. Goodwin, formerly superintendent of the Anniston Yarn Mills of Anniston, Ala., will succeed Mr. Harris as superintendent of the Seymour Mills, Seymour, Ala.

A. F. Bentley, boss spinner, has changed from the Putnam Mfg. Co., Putnam, Conn., to the Manchaug (Mass.) Company

Alphonse Boudoin, loom fixer of the Contreville Mills, Manville, R. I., has resigned to work in a similar position with the Manville Co., same city.

Gideon Larive, loom fixer in the Manville Mills, has resigned to take a similar position with the Contrexville Mfg. Co., Manville, R. I.

Eugene Corcoran, secondhand of spinning in the Ann & Hope Mills, Lonsdale, R. I., has resigned to become overseer of spinning in the Hebron Mills, Hebronville, Mass.

Frederick J. List has been promoted from sample maker to boss weaver in the jacquard department for T. Martin & Bro. Mfg. Co., of Chelsea, Mass., to take the place of G. R. Scheuhknecht, who has gone to Germany.

Lawrence Haworth recently resigned as overseer in the finishing department for the Renfrew Mfg. Co., at its lower gingham mill, Adams, Mass., after serving the company for the last thirty-six years. He will move to Manchester, N. H.

Guyton B. Davis, overseer of the card room at the Granite Mills, Fall River, Mass., has resigned and accepted a position with the Metropolitan Life Insurance Co.

George Bills, overseer of carding in the No. 4 mill of the Lonsdale (R. I.) Company, has resigned, after 15 years' service with this concern.

James Garvin of Lowell, Mass., is overseer of weaving for the Exeter Mfg. Co., Exeter, N. H. He succeeded Daniel B. Moerell.

Woolen.

Michael Jennies of North Vassalboro, Me., has resigned his position as dresser for the woolen company there.

Curt Tautenhan has accepted the position as loom fixer for the Beebe & Webber Co. of Holyoke, Mass.

Michael Leary of Woonsocket is now employed as loom fixer for the Medway Woolen Co., Medway, Mass.

Mr. Byers, formerly paymaster for the North Vassalboro Mills, Me., has succeeded A. T. Dundas as paymaster at the Moosup Mills, Moosup, Conn., Mr. Dundas being transferred to the Riverside Mills, Providence, R. I.

Robert Fritchie has succeeded Jos. Oldfield as boss weaver in the Vermont Mills, Ludlow, Vt.

Miss Mary Foley, while engaged in cleaning a loom while it was in motion at the Charles River Woolen Mill in North Bellingham, Mass., recently, had the forefinger on her right hand caught in the gear, and the top of the finger was badly crushed. The injury will prevent the young woman from working for some time.

Samuel Turner and Arthur Ackeroid, who built the new waste saving industry, which is working with such good results at Pontoosuc Mill, Pittsfield, Mass., have sailed for Liverpool. The plant at Pontoosuc is the first of its kind in this country and the men came over from England purposely to look after the building of it.

George W. Miller has resigned his position as watchman at the mill of the Medway Woolen Co., Medway, Mass.

Walter Champion has been promoted to fixer at the Dunbarton Wln. Mills, Dexter, Me., in place of Henry Mettiver who resigned to accept a position as overseer of weaving for the Morrison Wln. Co.

E. E. Tufts, who was formerly with the Concord Mfg. Co., Penacook, N. H., and other mills is now percher at the Camden (Me.), Woolen Co.

Agustus Eddy, designer and superintendent of the Saranac Worsted Mills of the American Woolen Co. at Waterford, has been appointed agent and manager of that plant, succeeding Frank H. Carpenter, who resigned his position as agent at the Saranac in order to accept a place as agent at the Weybosset Mill in Providence, where he succeeds Thos. Corcoran. These changes went into effect Tuesday. Mr. Eddy thoroughly understands the mill business, having worked his way up through the mill from the position of weaver and general mill hand, to the post of agent. Before accepting his position as designer and superintendent at the Saranac, he was employed at the Farwell Worsted Mills in Central Falls.

Thomas Corcoran, agent of the Weybosset Mills, has severed his connection with that plant. Mr. Corcoran is a well-known man in mill circles and is succeeded by a man from the Saranac Mills at Blackstone, another branch of the American Woolen Company. The new agent is named Carpenter and at one time his father was overseer in one of the departments at the Weybosset plant.

Walter Brogden, formerly with the Tingue Mfg. Co., of Seymour, Conn., is now at the Imperial Woolen Mills, Manayunk, Phila., where he is filling a position as overseer of worsted spinning.

George W. Miller had the misfortune to break has leg last week Wednesday morning in the Phoenix Woolen Mill, Staffordville, Conn. Mr. Miller was helping raise sheets of wool weighing about one hundred pounds to the upper floor. After one had been raised it fell full force, hitting him on the back and caused him to fall and badly broke the bone in the ankle. He was attended by Dr. C. B. Newton.

H. Prescott Brigham of the Brigham Woolen Co., Dayville, Conn., and Miss Marion Tanner of Springfield were recently married and are spending a part of their honeymoon at the Brigham cottage on the west shore of Alexander lake.

James C. Dodge has men at work repairing the boiler house at Bel Air Mill, Pittsfield, Mass.

A collection of over $75 was taken up in Pontoosuc Mill, Pittsfield, Mass., in the different departments yesterday for flowers for William Tubart's funeral.

Joseph Shiller has completed his duties at the Taconic Mill, Pittsfield, Mass., and has taken a position at Russells.

George Lusignan has taken a position at Tillotsons Mill, Pittsfield, Mass., in the weaving department.

Frank Poupoor has completed his duties in the carding room at the Taconic Mill, Pittsfield, Mass., and will return to his home in Hinsdale.

James Southern has ended his services as superintendent of the finishing department of the Hinsdale Woolen Company Mills, Hinsdale, Mass.

Patrick Casey has resigned as spinner in the Ray American Woolen Mill to accept a similar work in Springfield and he will remove his household goods to that city this week.

The overseers and employes generally in the American Woolen Mill this morning presented a substantial purse amounting to $150 to Patrick Kelly, who had his right hand crushed in a carding machine in the mill on the night of Wednesday, Aug. 2, necessitating amputation afterward. The injured man has always been most popular with both employers and employes, and all regretted exceedingly the accident which befell him.

Michael Leary of Woonsocket is now employed as loox fixer in the mill of the Medway Woolen Co., Medway, Mass.

The home of Mr. and Mrs. John Kennedy, superintendent of the Mystic Woolen Co., Old Mystic, Conn., was beautifully decorated with palms, flags and bunting on Tuesday, August 8th, when they entertained the Mystic Cornet Band of which Charles S. Cady is a member. The trip was made from Mystic to Old Mystic in the barge Bivalve.

Robert E. Horan of Pascoag, R. I., has accepted a position with the Falcon Worsted Co., of Pascoag, R. I., as boss finisher.

George McCartney has resigned his position as boss finisher for the American Woolen Co., Harrisville, R. I. He was surprised when leaving the mill by employes of the finishing department who presented him a handsome hall tree. After a six weeks' vacation at Revere Beach, Mr. McCartney will accept a position with the Tinkham Mill at Harrisville.

O. W. Wall, designer for the Park Woolen Mills, Rossville, Ga., has resigned on account of the climate being too severe, and has returned to Canada.

Miscellaneous.

Thos. Spillane, age 20, of Rockville, Conn., had his clothing caught in the belt and was taken over the shaft. He was badly bruised and perhaps injured internally but may recover.

Emile Lessre has taken charge of dyeing for John C. Meyer & Co., Jamaica Plain, Mass.

George Barr, assistant superintendent of the print cloth plant of the Manchester Mills, has resigned to become superintendent of the Trimble Dyeing, Printing & Finishing Co., Philadelphia, Pa.

Alfred Hodgson resigned from the Oakland Woolen Mills, Oakland, Me., to accept a position as superintendent for the Alexander Silk Mills, Passaic, N. J.

Cornelius Lowney, who has been employed by the Greenwich Bleachery, East Greenwich, R. I., as overseer of the starch room and tenter frames for the past nine years, has accepted a similar position in the new Barrowsville Bleachery at Barrowsville, Mass.

Morris W. Gilbert, boss dyer at the Merchants' Dye Works, East Dedham, Mass., has resigned.

Walter B. Hall, who for about four years has been superintendent of the mill and bleachery owned by B. B. & R. Knight at Portiac, expects to sever his connection with that concern next Saturday, his resignation having been tendered last week. Mr. Hall goes to Lowell, Mass., to become superintendent of one of the cotton mills in that city. The name of the mill was not disclosed, but Mr. Hall said that, while the position was not much better than his present one, the opportunities for advancement promised to be greater. Before going to Pontiac Superintendent Hall was superintendent for several years of the plant of the Boston Duck Co., at Bondsville, Mass. Prior to going to Bondsville, he was master mechanic at the Rochdale Mills at Northbridge, Mass

James Rumbolt, charged with arson in setting fire to a weave shed of the Arnold Plant Company, North Adams, Mass., was arraigned in the district court here today. Probable cause was found and the prisoner was held for the grand jury. Bail was fixed at $10,000, being unable to furnish which Rumbolt was returned to the jail.

Deaths.

A wide circle of friends and associates will mourn the death of Warwick H. Payne, which occurred on the 9th inst. after an illness of several months. For a number of years Mr. Payne has represented the Eureka Fire Hose Co. in the sale of its fire hose throughout the Southern States with headquarters at Atlanta, Ga. He was a native of Scottsboro, Ala., thirty years of age, and came from one of the best known families in Alabama. He was president of the Confederate Sons Association and former secretary to General Joe Wheeler. Mr. Payne was educated at the University of Alabama and graduated as a lawyer, but owing to ill health was unable to follow up his practice. He was also prominently identified with the Smithsonian Institute at Washington, as expert on Indian exhibits.

Samuel Marcil died last week from the results of a fall at Taftville, Conn. By occupation he was a loom fixer in the Ponemah Mills, was also a member of the Taftville Band. He is survived by a wife and five children, three boys and two girls.

Owen Gagan, who died Aug. 15th, was employed at the Riverside Mills, Providence, for many years, for four years or more was not actively engaged.

Andrew Newell Baker, for 54 years paymaster for the Manchester (N. H.) mills, died on July 31 at his home in that city, aged 76 years.

Frank Fiske, a retired woolen goods manufacturer, died suddenly at Chepachet, R. I., aged 55 years. He began his career in the mill of his brother, John T. Fiske, Jr., in Pascoag, R. I., was later an agent for the American Woolen Co., and afterward associated with Arthur Ames in the management of the Hope Worsted Co., at Oakland, R. I.

William W. Armstrong, of North Adams, Mass., died July 19, aged 66 years. He was born in Ireland, but came to America about fifty years ago, and assisted Harvey Arnold in establishing the Arnold Print Works. He remained with the Arnold Print Works as chief chemist and color mixer until a year and a half ago, when he retired on account of ill health.

Leonard R. Pickett, an old resident and overseer in the Putnam Mfg. Co., Putnam, Conn., died recently. He was 69 years old and is survived by a wife and eight children.

Andrew Newell Baker, paymaster of the Manchester Print Works, Manchester, N. H., for fifty-four consecutive years, died recently at his home, aged 76 years.

George W. Hall, a retired textile manufacturer of Chester, Pa., died recently, aged 58 years. He is survived by a widow and nine children.

Fred M. Garcelon, for fourteen years an overseer in the mill of the Hill Mfg. Co., Lewiston, Me., died on August 6th, at the age of 56 years.

Edward Noon, 85 years old, one of the oldest manufacturers of hosiery and knit goods in the city, died on Saturday, Aug. 12th, at the home of his son-in-law, Wm. H. Smith, 1133 Silver St., of general debility. He was born in Newtown, England, on July 31, 1820, and came to this city in 1857. In 1865 he began manufacturing hosiery and knit goods, and subsequently took his son, Thomas, into partnership under the firm name of E. Noon & Son. He continued the business up to his last illness. He was for over forty years a leading member of Nicetown Baptist Church, of which he was senior deacon. A son, a daughter and three grandchildren survive him.

B. Marshall Pitts, prominent in the New England cotton trade, manufacturer of cotton warp at Fitchburg, his home, died at Leominster, Mass., recently at the country residence of Hamilton Mayo where he had been visiting for several weeks. He was the only surviving son of the late Hiram W. Pitts, was a native of New York state, coming east in his youth and living nearly his whole life in Leominster and Fitchburg. Here he was repeatedly honored with office, including alderman, in the aforementioned city. The cause of Mr. Pitts' death was a disease which developed about a year ago. He is survived by his wife, two sons and two sisters. He was a high Mason and 53 years of age.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Woolen and Worsted Finishing, Part II; John F. Timmermann; American School of Correspondence, Chicago, Ill.

The second instruction paper on woolen and worsted finishing begins with drying and includes chapters on dry beating, brushing, shearing, steam brushing, pressing, inspecting, measuring and packing. The author has brought to the work of compiling these papers a thorough knowledge of the subject obtained by many years' experience as a practical finisher and broadened by a careful study of the theory of the art.

British Weights and Measures Association; George Moores, Sec., 25 Victoria St., London, W.

We have received a copy of the annual report of this young but vigorous association. At the time of its organization a year ago the metric propaganda was under full headway in England. A bill to make the metric system compulsory was pending and subsequently was passed in the House of Lords, and under the mere weight of the authority of theorists' opposition to the movement was nearly silenced, being confined to individual and isolated protests. That all this has been changed is due largely to organizing the common sense of England and giving direction to this force through the British Weights and Measures Association. It is intended to extend the organization throughout the world in order that the defence of the English system may be brought to the highest efficiency wherever weights and measures are used.

Besides statements regarding finances and membership which are of a satisfactory character the report gives many effective extracts from antimetric arguments. The report outlines a plan for a system of co-related units of length, volume and weight, based on the English inch, which commends itself to the thoughtful consideration of all who recognize the desirability of such co-relation in many important industries and fields of research.

The Technolexicon of the Society of German Engineers.

In the compilation of this universal technical dictionary for translation purposes (in the languages English, German, and French), that was commenced in 1901, about 2,000 firms and individual collaborators at home and abroad are assisting at present.

Up to now 2,700,000 word-cards have been collected. To these will be added the hundred thousands of cards that will result from the working-out of the original contributions not yet taken in hand. The contributions have been called in since Easter, 1904, and most of them have already come in (up to June, 1905: 1,480). The preliminary work will be finished in the middle of 1906; at the end of the same year printing is to begin, which will take up about 3 years.

Dr. Hubert Jansen, Editor in Chief, Berlin, (N. W. 7.) Dorotheenstrasse 49 will be pleased to give any further information.

Tabular Sketch of the Artificial Dyestuffs and their Use in Dyeing and Printing (Tabellarische Uebersicht ueber die kunstlichen organischen Farbstoffe); by Dr. Adolf Lehne; Julius Springer, Berlin, Germany. Price $2.00.

A very valuable work giving in concise form a description of the artificial dyes now on the market. The information is arranged in tabular form and includes the name of each dye, its use, degree of fastness, and test for recognizing it on the fibre. The account of each dye is accompanied by one or more dyed or printed samples. Reference is made to the more exhaustive work, "Ubersicht der kunstlichen organischen Farbstoffe," of Schultz and Julius. The practical dyer will find this smaller edition invaluable in the daily practice of dyeing and printing. The samples are an especially valuable feature. The text is in German, but there are few American dyers and printers to whom the book would not be worth more than its price whether they read German or not.

Distinguishing Cotton from Linen (Die Unterscheidung von Baumwolle und Leinen); Dr. Alois Herzog, Sorau, Germany. Price 50 cents.

A translation of this valuable pamphlet appears in this issue of our magazine. In addition to what appears in the translation the German pamphlet contains some very interesting colored plates showing the actual tints produced on cotton and linen cloth by treatment with the various reagents.

The Crank Embroidery Machine (Die Kurbelstickmaschine), by A. Spremberg; L. A. Klepzig, Leipzig, Germany. Price, $1.25.

This work treats of the construction and operation of the crank machine for embroidering fancy designs on textile goods. It is freely illustrated with drawings of the various parts and forms a companion book to the one published in 1900 which treated of the process of embroidery, designing, etc.

Business Literature.

International Exposition of Textile Industries.

We have received a copy of the pamphlet containing the rules under which the exposition at Tourcoing will be conducted next year. It also gives the program and classification of the exhibits. While the textile industry is the principal feature of the exposition, other departments will not be neglected.

Power Transmission Engineering; Dodge Manufacturing Co., Mishawaka, Ind.

This is a 470-page volume in which the products of the Dodge Mfg. Co. are described and illustrated. They include shafting, coupling, hangers, bearings, boxes, pillow blocks, brackets, belt tighteners, guide pulleys, binder frames, friction clutches, wood and iron split pulleys, solid pulleys, bushings, spur, bevel, mitre, and friction gearing, sprocket wheels, link belting, water wheel harness and complete apparatus for transmitting power by ropes. The book from a typographical standpoint is in every way worthy of the high character of the products which it describes. It is a well-bound volume and should find a place on the desk of every user of power.

The Eureka Fire Hose Company.

We are informed that P. O. Hebert, 615 Peters Bldg., Atlanta, Ga., will hereafter represent the Eureka Fire Hose Company, as general agent for the exclusive sale of its high grade brands of fire hose in Georgia, Alabama, Mississippi, Louisiana, North and South Carolina, Florida, Virginia, Texas, Indian and Oklahama Territories. He takes the position made vacant by the death of Warwick H. Payne.

Mr. Hebert will have associated with him D. E. McGaw, who will locate at Dallas, Texas, H. H. Alvis, who will locate at Charlotte, N. C., and C. B. Payne at New Orleans, La.

Mr. Hebert will be in charge of headquarters at the Atlanta address.

Advertising Engineers.

Halbert P. Gillette, formerly associate editor of the Engineering News of New York and George H. Gibson, who has been associated with some of the largest mechanical concerns in the country in the capacity of advertising manager, have formed a co-partnership to be known as the George H. Gibson Co., Park Row Bldg., New York City. They undertake to conduct advertising in the same manner as would a department in a firm's own offices and are not advertising agents in the usual sense of the term, as they receive no commissions, rendering only service and leaving actual purchasing of space and printed matter in the client's hands. With their previous experience they ought to be in a position to render valuable aid in that direction.

Mr. Walther Will Sell the Seyfert & Donner Machinery.

Otto Walther announces to the trade in general that he has given up all connections with Irmscher & Co., and secured the sole right of sale in the United States for the machines of Seyfert & Donner, a firm known as leading manufacturers of all kinds of hand and motor knitting machines. These machines will be handled by him in addition to the machines of Schubert and Salzer for full fashioned hosiery.

Mr. Walther has removed from his old quarters at 591 Bourse to larger quarters in No. 507, the same building, where in the near future he will have on exhibition some hand and motor machines of Seyfert & Donner.

Cabling and Armoring Machines.

The Aiton Machine Company, 126 Liberty Street, New York, have just issued a bulletin illustrating one of their cabling and armoring machines used for the manufacture of concentric cables of bare or insulated iron, steel or copper wire and for armoring purposes. Specifications and quotations will be cheerfully furnished upon application at the New York office of the company.

The Summer Refuge.

Scarcely are the gang-planks pulled ashore, when, with a start, the boat has left the wharf and is footing it rapidly down stream. Then you remember that the Sandy Hook line is the fastest out of New York, or any oth. harbor for the matter of that. There is yet something in store to thrill the man who has not seen the "sky-scrapers," standing together like a band of giants at a hunting, as they transcend the purple vapors of evening, and catch on their higher portions the rosy light from the setting sun. Then, as even more steadily than the Ancient Mariner, we drop "below the kirk, below the hill, below the light-house top," we have passed the Statue of Liberty, the Narrows themselves, and perceive the wooded shore of Staten Island running off mistily towards New Jersey. On the other side the lights of Coney Island sink in distance, and presently we are inside the long bar of Sandy Hook. What in the world could be more refreshing than this splendid sail at the beginning and end of a summer day.

From Atlantic Highlands the innumerable attractions of the coast from Highland Beach to Point Pleasant are within easy reach, and surroundings may be found to suit every taste. The express train service embraces Navesink, Normandie, Seabright, Monmouth Beach, West End, Long Branch, Elberon, Deal, Allenhurst, Asbury Park, Ocean Grove, Avon, Belmar, Spring Lake, Manasquan, Point Pleasant, Red Bank, Matawan, Freehold, and other resorts boasting well kept hotels. The coast is justly famous for its facilities for yachting, driving, automobiling and both salt and fresh water bathing. Besides the Sandy Hook route the New Jersey Central has an all rail route with stations at the foot of West 23d Street, N. R., and at the foot of Liberty Street, N. R. All trains are equipped with the latest designed Pullman Parlor cars and coaches. Upon application to C. M. Burt, General Passenger Agent, Central Railroad of New Jersey, New York City, a hotel book and Sea Shore time-table will be sent you; they are free for the asking.

The Arlington Mills, Lawrence, Mass., and the Nashua Mfg. Co., Nashua, N. H., have just placed orders with the B. F. Sturtevant Co., of Boston, Mass., for complete equipment of fans and heaters for dye house ventilation.

New Manager of the Birdsboro Steel Foundry & Machine Co.

L. E. Thomas, formerly with the United Engineering & Foundry Co., of Pittsburg, has accepted the position of general manager of the Birdsboro Steel Foundry & Machine Co., having taken charge August 1st. Mr. Thomas is well known to the trade and was tendered the position of assistant general manager of the Republic Iron & Steel Co., whose engineering work on their new rail mill at Youngstown was in his charge, a month prior to his accepting his present position. Another piece of engineering work, ably conducted by Mr. Thomas was that of the construction of the Ohio plant of the Carnegie Steel Co.

The Eastern Maine Overseers' Association.

The ninth annual convention of the Eastern Maine Overseers' Association was held at Waterville, Maine, August 26. The meeting was called to order by F. M. Moore and at the election of officers, L. A. Houston of Guilford was chosen president, P. H. Russell of Dexter, vice president, L. C. Sawyer, secretary and J. T. Davidson, treasurer. There was a long discussion in regard to publishing a manual which was finally left to a committee of five. After the business meeting a banquet was held in the armory building. Among the members present were: A. E. Barnes, Oliver Bergerrn, Adolph Berkhart, Theodore G. Berherst, D. G. Burns, W. B. Causland, Edward Chase, J. H. Charlesworth, Geo. H. Collins, William H. Collins, J. M. Curran, F. L. Cushman, J. T. Davidson, B. M. Earle, H. O. Farrer, Andrew Fraisier, C. P. Gilman, C. L. Healey, A. C. Houston, J. H. Johnson, James B. Jones, John Keefe, James Kreiger, Edward Leech, C. W. Lucas, John M. Luistrey, J. M. Magner, Edward Magner, A. D. Mansell, J. O. Margridge, David Menzier, Fred Mellon, C. Merrow, J. E. Morrisette, Fred Moore, Alden Moore, Geo. H. Newry, Chas. North, David Pike, Fred Pooler, Percy Russell, Thomas Rouse, E. C. Reinhardt, David A. Simpson, L. C. Sawyer, C. W. Stevens, Irving Small, Jeremiah Tourgee, W. W. Thompson. Chas. Tait, James S. Trumbull, Fred Teal, John Webendorfer, A. H. Webendorfer, R. L. White, Herman Whitehouse, Abel Wall, Abraham Walker, Alfred Wigglesworth. Twenty-five new members were elected as follows: E. B. Ayer, Francis Armstrong, Geo. F. Cathcart, C. H. Cook, Joseph Carter, William S. Dow, Walter Gledhill, Robert G. Henderson, Robert A. Julia, Sumner A. Leach, Chas. H. Lamb. James M. Marton, Wm. McGilvery, John O. Reilly, James P. Ryan, Joseph A. Ruell, Frank W. Seavy, Chas. H. Speak, Wm. F. Scott, R. T. Sullivan, John L. Seavy, Clark B. Saunders, Gordon Wagness, Edward F. Williams, J. H. Williams.

This meeting was one of the most successful in the history of the Association.

C. T. DONLEVY.

The Togo Spinning Co., of England.

The Manchester Journal of England contains a long account of the ceremony at the breaking of ground for the new cotton mill to be built at Barton, England, which will be known as the Togo Spinning Co. This site is in close proximity to the Manchester ship canal and is admirably located for the purpose intended. The mill is to be of 115,000 spindle capacity; five stories in height, and covers an area of 5,400 square yards. It will be of steel, and the outside walls will be carried by girders resting on steel columns and running down to the centre of the piers. It will be capitalized at $500,000 and we note by the report that the machinery will be supplied by the well-known English firm of John Hetherington & Sons, Ltd., of Manchester, and will comprise all the latest improvements in opening, scutching, carding, drawing and spinning machinery made by this company. The mill is to be driven by a 1700 H. P. vertical triple engine with rope drives.

Foreign Trade.

The following circular has been issued by the Department of Commerce and Labor at Washington:

To Manufacturers and Exporters:

The Department of Commerce and Labor is desirous of securing the co-operation of manufacturers and other persons interested in the efforts being made by this Department, through the Bureau of Manufactures, to extend the foreign trade of the United States.

In furtherance of this work, it is proposed to establish a comprehensive card index which will enable the Department, upon application, to furnish information desired by manufacturers, or by intending purchasers, and it is contemplated to extend the system, if the necessary authority shall be granted by Congress, to our principal consulates.

To enable the Bureau to prepare such an index, you are respectfully requested to fill in the accompanying blank, and furnish briefly any additional information which you may desire to have recorded in connection with your business. In mailing reply please use the inclosed envelope.

Very respectfully,
John M. Carson,
Chief, Bureau of Manufactures.

The blank accompanying the circular calls for the following information:

Name and address.
Location of branches.
Description of product.
Capital.
Capacity per day, month or year.
Where product is sold (if abroad, give countries and ports).
Any other information.

Worsted Combs and Pins.

R. H. Hood, the well known manufacturer of machine wool combs and dealer in American and English cast steel pins is unusually busy. Mr. Hood's address is 1842-44-46 Germantown Avenue, Philadelphia, where he is also prepared to manufacture circles, hackles, gills, fallers and porcupines and circle knives to any pattern.

Heddles.

The Steel Heddle Manufacturing Co., located at 1842 to 1846 Germantown Avenue, Philadelphia, Pa. manufacturers of the well-known flat steel heddles for silk cotton and worsted weaving, have been very successful in receiving orders. The company at this time are very busy having received large orders for their new heddle from some of the largest textile mills in the country with other and repeat orders still coming in. The demand also for the old heddles produced by this concern is still large and the company are kept busy in turning them out in sufficient numbers to fill their orders.

Smoky Chimneys.

An English correspondent of the B. F. Sturtevant Co., Boston, Mass., writes: "Our local newspaper had its lynx eye on a smoky chimney that belonged to an ex-mayor of the town. It held that public men should not be producers of public nuisances.

"I called to see my friend, the ex-mayor, and he said, 'Look here, they are at it again and now they threaten a prosecution.' He told me what he had done to prevent smoke pollution. He had put in patent stokers, steam jets to aid the draught, a new sort of patent grate bars, raised the chimney 25 feet and had used a better class of coal, and he said, 'What more can I do?' He was a busy man and was glad when I offered to go to his works to see if I could suggest anything that could be done.

"So much depends on the fireman that we both came to the conclusion that it must be all his fault. I found, however, that the two boilers which had been quite sufficient for the works as originally planned, were not so now that a large dye house had been added and was now in full work. The steam used by a dye house is almost an unknown quantity. The boiler man could not keep the steam up to 80 lbs., it was often down to 45 lbs., and the looms running at a low speed, when the dyers had to be told to shut off all the steam they could, until it got up again. In the meantime black smoke held its way.

"I suggested that a 32 in. 'Sturtevant Fan' be put in at the root of the chimney—this fan to work at a varying speed to suit the demand for steam. A fan was put in and it ended the trouble, no more complaints about 'black smoke,' plenty of steam for all purposes, the quantity and quality of the work was improved, and all at a comparatively small cost, which was soon repaid by less coal consumption."

Drying Cloth.

In connection with his recent paper read before the American Society of Heating and Ventilating Engineers, H. J. Barron stated that its subject matter was suggested by a talk with one of the ex-presidents of the society, who said that one of his customers had determined to install exhaust fans in his cloth-drying room. But he advised him strongly not to use them, as, in his opinion, the proper way to dry material like wet cloth was to force warm air into the drying room; that where disk fans were used to exhaust the air in connection with direct heating coils, the leakage of air through the walls and around the windows nullified the drying effect by reducing the temperature of the air in the room. He further said that it was noticeable wherever this latter system was used that the drying rooms had wet floors, whereas, where the air was forced in hot, the moisture was carried entirely out of the ventilators.

Mr. Barron went on to say that "the problem is to force a certain volume of air into and out of the drying room, changing the air in this room every five to ten minutes, the temperature of the air as well as the rapidity of the change depending upon the moisture and the outside atmospheric conditions."

Wire Rope Lubrication.

Elevator and other cables used for hoisting purposes are subject to both internal and external wear; the former is caused by the rubbing of the wires and strands upon one another under pressure in bending over the sheaves, the latter by rubbing and wedging in the grooves of the pulleys. Unless the cables are kept well lubricated they wear and deteriorate rapidly.

As a lubricant for wire rope Dixon's Ticonderoga Flake Graphite has the endorsement of the leading manufacturers as well as the approval of those experienced in its use, because of the well recognized fact that flake graphite prevents the abrasion and wear of all parts coated with it. For this purpose graphite must be combined with suitable greases to make it adhere, but there has always been considerable danger and difficulty in applying grease to moving cables.

Dixon's Handy Graphite Rope Dressing supplies the ideal qualities of Dixon's Flake Graphite as a wire rope lubricant in such a form as to make it thoroughly acceptable to practical men who have used it. The package is of about the size and shape of an ordinary book and contains nearly three pounds of graphite lubricant. It is easily applied by holding the open edge of the package against the cable while in motion.

There is no trouble and no danger to the workman, no waste nor dripping off of lubricant. The economy and efficiency of Dixon's Handy Graphite Rope Dressing, in prolonging the life of wire rope and saving the expense of frequent renewals of worn cables, should commend it to the careful attention of every firm operating hoists or elevators.

For prices and full particulars address the makers, the Joseph Dixon Crucible Co., Jersey City, N. J.

Heating and Ventilating.

After careful examination of the important heating and ventilating systems in railroad shops throughout the United States, the Erie Railroad Company have awarded the following contracts:

Buffalo Fan System heating and ventilating outfits for the 42-stall round house at Buffalo, N. Y., requiring Buffalo steel plate 220 in. fan with belt connected 75 H. P. motor, and heater containing 15 four row sections, each section 6 ft. by 8 ft. 4 in.; for the 43-stall round house at Hornellsville, N. Y., requiring Buffalo steel plate 210 in. fan with belt connected 60 H. P. motor and heater containing 20 two row sections, each section 7 ft by 9 ft. 4 in.; for the 21-stall round house at Galion, Ohio, requiring Buffalo steel plate 150 in. fan with direct connected 8 by 10 Buffalo engine, and heater containing 10 four row sections, each section 5 ft. by 6 ft. 10 in.; for the 21-stall round house at Huntington, Ind., requiring Buffalo steel plate 150 in. fan with direct connected 8 by 10 Buffalo engine, and heater containing 12 four row sections, each section 5 ft. by 6 ft. 10 in.

If the pipe alone used in these heaters were laid in single continuous length, the distance covered would be practically 6 1/2 miles.

Garnett Machinery.

The James Hunter Machine Company, of North Adams, Mass., have added to their line a new department, viz: garnett and metallic toothing, the furnishing of metallic-wound cylinders, feed rolls, lickerins, burr rolls, and metallic breasts for cards and reclothing for same. They have equipped their shops with up-to-date machinery such as experience has demonstrated is best adapted for this line of work, and have associated with them a competent force of men who are thoroughly acquainted with the requirements of the trade, and who are, through long and successful experience, more capable of producing satisfactory results than anyone else in the business. This company has for so many years produced and put out to the trade such a line of high-grade machinery that it is hardly necessary to say more than that the trade-mark "The Hunter" applied to the garnett line insures the highest degree of satisfaction. We take pleasure in commending them to users in this new line on which they have embarked.

Announcement.

Fifty years of experience in the field of heating and ventilating have won enviable reputations for the Lord & Burnham Company, Pierson-Sefton Company and Hitchings & Company.

We learn of their having united, under the firm name of Burnham Hitchings Pierson Company, with offices at 1133 Broadway, N. Y. City, and works at Irvington-on-Hudson, N. Y., and Jersey City, N. J.

As greenhouse architects and builders, these firms have always been strong leaders. The combining of their many patented features and their complete mastery of all details brings to the trade a concern not equaled in equipment.

Opportunities.

Manufacturers, business men and investors have the door of opportunity opened wide to them in a book recently issued by M. Schulter, Industrial Commissioner of the St. Louis and San Francisco R. R., St. Louis, Mo. It contains a list of the stations along the line of that road with a brief description of the products and business opportunities of the respective localities. A copy will be mailed on application to Mr. Schulter, whose office is at Room 709 Frisco Bldg., St. Louis, Mo.

Electric Power in the Weave Room.

The Dartmouth Manufacturing Corporation of New Bedford, Mass., has placed an order with the General Electric Company for electric equipment for driving a part of its weave shed. This weave shed was designed and is being erected under the supervision of F. P. Sheldon & Co., the well known engineering firm of Providence, R. I. The apparatus consists of one 3-phase, 60 cycle, 8 pole, 75 Kw., 900 r.p.m., 600 volt, belt driven, alternating current generator with direct connected exciter, together with one 75 H. P., 550 volt, resistance-in-armature type induction motor and necessary switchboard equipment.

Finishing Materials.

The Arabol Mfg. Co., 100 William Street, New York, make a specialty of soluble oils, alizarine assistants, sizings and starches. They know that an extensive practical experience must be backed up by science to keep abreast of the times and in their well-equipped laboratory under the management of trained chemists they are continually experimenting to improve their products for the benefit of their customers. Many of our leading textile manufacturers bear testimony to the success of their efforts in this direction. Their equipment enables them to meet any special or exceptional conditions that may arise in the mill.

Spools and Bobbins.

The Wisconsin Mfg. Co. of Two Rivers, Wis., have just completed a large addition to their plant and have begun the manufacture of bobbins, spools, spindles, etc., on a large scale. They have also increased their hosiery board department and report that they are in a better position than ever to handle the mill trade, not only so far as quantity and quality are concerned, but also as to the prompt filling of orders.

Hot Water Washed Fleeces.

The "Australasian," in an interesting article, revives the question as to whether growers acted wisely in altogether abandoning the custom of hot-water washing the fleece on the sheep's back. After ascribing the discontinuance of the practice to the inability of the American buyers to purchase washed wools, on account of their highly protective duties, and the difficulty of procuring suitable labor for the unhealthy work, the following paragraph appears:—

"To thinking men in the wool trade, however, it has always been a question whether hot-water washing was not abandoned too precipitately, and this is especially the case as regards lambswool. For in lambswool the American demand is not very conspicuous, the prices for this class of wool being usually made by Yorkshire and the continent. This view seems to find signal support in the news just received by private cable to the effect that Mr. James Russell's Barunah Plains washed lambswool has been sold in London at up to 3s. 6d. per lb. No less than 50 bales averaged 3s. 0 1/2d. In these modern times these prices are quite sensational. The explanation of these extreme prices—compared with the greasy prices—being realized is that these hot-water washed lambs come up a better color than those shipped in the grease, and also handle softer. But it must also be borne in mind that the clip referred to is an exceptionally superior quality of wool, and that the superior quality is just as noticeable in the lambswool as in that from grown sheep. To all who take an interest in the growth of high-class Australian merino wool the sale of the Barunah Plains washed lambs is a notable event."—The Textile Mercury.

The Australian Wool Trade.

In their annual review of the Australian wool trade Goldsbrough, Mort & Co., Melbourne, sum up the situation as follows:

17th March, 1905.

We are glad to record that the past year, from the point of view of the Australian wool grower, has been an eminently satisfactory one, and has been characterized by more even conditions than have obtained for a lengthened period. Fortunately, for the first time for some years, we have not to report any losses of stock from drought, the pasturage in the whole of Australia having been sufficient for the stock held.

The season has not been by any means a wet one. the last half of the year being marked by comparatively dry weather, and at the moment, to ensure a good lambing and favorable winter conditions, general rains are anxiously looked for during the current month.

The high all-round level of prices ruling cannot but be satisfactory to growers, more especially in the coarser descriptions of crossbreds, and particularly as the clip for the season shows an increase, estimated at 150,000 to 175,000 bales. Up to date the experts show an increase of over 200,000 bales, but shipments have been earlier than usual, and when balance of clip has left the States, the above estimate will be found to be about correct.

Next year, given an early rain to assure lambing, an even greater enhancement in figures is looked for.

The reaction in favor of crossbred grades has been a remarkable one. After ten years of low prices, they this season reached a level that has not been seen since 1895. The diminished output from South America and New Zealand is, of course (combined with the relative dearness of Merinos), a contributing factor to the higher rates, added to which large orders for the Russo-Japanese war caused eager inquiries for the coarse material. In Australia many growers have gone out of cross breds altogether, discouraged by the long series of years with low prices, so that the output of the Commonwealth is also less in common with other countries.

It must be borne in mind that the level of prices reached during the Australian season for coarse grades was abnormal, and has been principally due to war requirements, so that it is natural to expect that with the cessation of the present struggle considerably lower rates may be expected.

Already in London sales made this week show a depreciation of 15 per cent. on January rates.

The American demand has again been a strong feature of the sales, their purchases amounting to 75,000 bales, a larger aggregate than they have reached for many years. Their operations were mainly confined to high-class merinos and any attractive parcels of low grade crossbreds, and to their competition is greatly due the enhancement in prices obtained for these qualities.

Trade with Japan, confined practically to purchases of scoured wool, reached greater proportions than at any previous period, and was a gratifying adjunct to the general buoyancy.

The year's operations have given further emphasis to the increased favor with which Australian sales are regarded by growers and buyers, the quantity sold in Australia showing an increase of 176,887 bales, representing practically the whole of the year's increase, or 81 3/4 per cent. of the total production of the Commonwealth.

During the year we have had the pleasure of welcoming many new buyers representing houses that hitherto have confined their purchases to London, the fact having been forced on them that they must buy at the centres of production to have large and high-class selections to choose from.

As is well known, the Victorian wool selling season has extended as a rule from about middle of October to about end of January, sales being held continuously five days weekly, with exception of a break of about three weeks for Christmas and New Year vacation.

With the increased favor into which the local markets have grown, and the largely augmented quantities offering, the labor involved has become very heavy, and it has been suggested by the buyers that the period of selling be extended for, say, fully another month, and that the selling days be reduced to four days weekly instead of five, and that quantities offering be so reduced that the last month of the season will see sufficiently good catalogues to command sustained competition.

The method is already followed in Sydney, and it is expected that a general meeting of buyers and brokers will be held in October next to decide on the conditions governing the succeeding season.

During the year just passed fitful falls of rain have been recorded throughout the States, but this has not been sufficient to promote an adequate growth in the pastures. There are still areas of country which have not completely recovered from the effects of the drought, and in almost all quarters the monsoonal rains are being anxiously looked forward to for further relief.

In the interior the lambing season is approaching, and as the present condition of feed on the grazing lands is very dry, a general and soaking rainfall is required to assure a satisfactory lambing and a prosperous season.

Removal Notice.

Manufacturers of all kinds of textile fabrics are requested to note the removal of C. Wolfenden from his old location at 2257 North 2d Street, Philadelphia, to 2316 North 2d Street.

Mr. Wolfenden who, for the past two or three years has been engaged in the buying and selling of new and second hand textile machinery, has been so successful that his removal to the above address became necessary on account of needing more room. In his new quarters, where he is occupying the entire building, he is prepared to equip mills from top to bottom with all kinds of textile machinery, and he invites manufacturers to give him a call when anything is needed in this line. Another and most important feature of his business is that of dealing in odd lots of yarn of any kind. He requests manufacturers to send him samples and prices before disposing of such stock in any other manner, and at the same time he would be glad to hear from them if they are in need of odd lots of yarn to fill orders or in making up samples for the trade.

Enconomizers for Steam Boilers.

The ability of an economizer to increase the capacity of an existing boiler plant is well shown by the conditions under which the B. F. Sturtevant Co., of Boston, Mass., has installed for the Olympia Cotton Mills, Columbia, S. C., two exceptionally large economizers to be used in connection with 12 vertical Cahall boilers. Not only will the output of the plant be materially increased, but it is contemplated that a fuel saving of at least 20 per cent. will be secured.

The largest economizer in the New England states has just been installed by the Sturtevant Co. for the American Woolen Co. at Maynard, Mass. It is divided into two groups, the first being used for heating feed water for the boilers and the second for furnishing hot water for dyeing purposes. It is stated that even before the installation was entirely completed, a saving of $500.00 per day in coal was attained.

The National Tube Co. has placed a large and important order, for immediate execution, with the American Blower Co. of Detroit. The contract embraces complete heating equipment for their five new mills at Lorain.

Persian Rugs.

Writing from Harput, Turkey, Consul Norton tells an interesting story of the rug trade in the province of Azerbaijau, Persia. He says:

The rug and carpet trade of the province is of special interest in this connection, as about nine-tenths of the product finds its way directly or indirectly to the United States.

The rug industry of Tabriz dates far back; the products of its looms are regarded by many as the most beautiful among the many varieties of Persian rugs. There is one large factory in the city, where I found over 1,000 lads busily occupied on rugs of all sizes and designs. Many were reproducing the old patterns which were in vogue over five hundred years ago and are still admired in both hemispheres. These lads work with great rapidity, and earn from $2.50 to $3.25 per month. The number of operatives in this one factory is largely increased in flush times. There are other smaller factories in Tabriz and in the lesser towns, while individual looms are encountered in most of the villages.

A few years ago aniline dyes were extensively used to dye the yarns employed in making rugs, and the effect was quickly felt in the decreased demands from abroad. In order to counteract the evil results the Government very promptly resorted to the extreme measure of prohibiting the entry of aniline dyes. The measures taken in this respect have been fairly successful, and now but few rugs show traces of aniline colors. While thus striving to maintain the reputation of the Tabriz rugs at the place of manufacture, much dissatisfaction is expressed by those engaged in the trade at the treatment to which the products of Tabriz looms are frequently exposed after reaching America. In order to meet changing whims of fashion, certain tints are often altered into more popular hues. The methods of bringing about these chromatic changes are of a nature which not only affect the original color schemes, but frequently impair the permanence of the rug, thus seriously injuring the reputation of the wares.

Recent Textile Patents.

BRAIDING MACHINE. 795,925. Thomas K. Ober, Philadelphia, Pa.

CLOTH FOLDING and Measuring Device. 795,727. Calhoun Norman, Cedarville, W. Va.

CLOTH OR PAPER REWINDING Machine. 795,507. William S. Hatfield and William R. Thompson, South Norwalk, Conn.

CLOTH RUBBING and Glazing Machine. 796,462. Henri Simonin, Zurich, Switzerland.

COTTON GIN. 796,861. Frank Phelps, Wellston, Oklahoma.

COTTON GIN. 796,862. Frank Phelps, Wellston, Oklahoma.

COTTON PICKING Machine. 796,422. Peter P. Haring, Goliad, Texas.

COTTON PICKING Machine. 796,421. Peter P. Haring, Goliad, Texas.

DECORTICATING MACHINE. 796,453. Gustav H. Roeder, Philadelphia, Pa.

DYEING APPARATUS. 796,381. James A. Willard, Chattanooga, Tenn., assignor to Vacuum Dyeing Machine Co., Chattanooga, Tenn.

DYEING APPARATUS. 796,668. James Marshall, Fall River, Mass.

BOBBIN AND SPINDLE Connector. 795,008. John Roney and John C. Rae, Woonsocket, R. I.

CLOTH DRYING Machine. 794,228. James S. Johnston, Utica, N. Y., assignor to Johnston Novelty & Mill Specialty Co., Utica, N. Y.

CLOTH, LAYING. 794,307. Albert O. Morse, Chester, Vt., assignor of one-half to James E. Pollard, Chester, Vt.

COTTON PICKER. 793,210. Wensel Morava, Chicago, Ill.

DOUBLING AND TWISTING Machine. 794,427. David Schmutz, Paterson, N. J.

DYEING. 794,314. Bernhard Richard, Basel, Switzerland, assignor to Aniline Color and Extract Works.

DYEING APPARATUS. 793,594. Otto Kunz, Vienna, Austria.

DYEING, MACHINE for. 793,510. Stuart W. Cramer, Charlotte, N. C.

PILE FABRIC, Woven. 791,952. William M. Stevenson, Indian Orchard, Mass., assignor of one-half to Frank F. Hodges, New York, N. Y.

DYEING MACHINE. Duplex. 796,382. James A. Willard, Chattanooga, Tenn., assignor to Vacuum Dyeing Machine Co., Chattanooga, Tenn.

ELASTIC FABRIC. 797,194. James L. Gilson, Boston, Mass., assignor to Howard Mfg. Co., Boston, Mass.

FABRIC MAKING Machine. 795,289. George A. Lowry, Chicago, Ill.

FABRIC and Making Same. 795,290. George A. Lowry, Chicago, Ill.

LACE MAKING Machine. 797,067. August Matitsch, Vienna, Austria-Hungary.

LOOM ATTACHMENT. 796,373. John M. Van Werry, Randleman, N. C.

LOOM FILLING TENSION DEVICE. 796,004. Jonas Northrop, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM FLUID PRESSURE Shuttle Actuating Mechanism. 795,731. Samuel F. Patterson, Baltimore, Md.

LOOM HARNESS. 795,368. George W. Renkel, Paterson, N. J.

LOOM HARNESS HEDDLE Separating Device. 795,989. Charles D. Lanning, Boston, Mass., assignor to American Warp Drawing Machine Co., Boston, Mass.

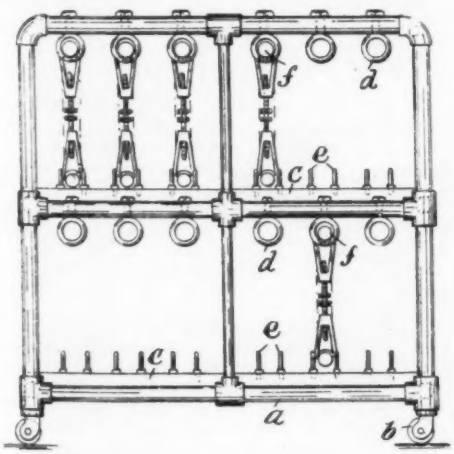
LOOM JACK ADJUSTER. 795,694. James Dawson, Waltham, Mass.

LOOMS. Pattern Matching Mechanism for Tapestry. 796,102. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM SHUTTLE. 797,477. Charles B. Webster, Fall River, Mass., assignor of one-half to James K. Lanning, Boston, Mass.

LUSTERING APPARATUS. 759,547. Tomas Scaramuzza, Paterson, N. J.

This present invention relates to stretching and lustering silk in skeins, and has for its object to



provide a stretching means of such form that the skeins can be quickly and conveniently assembled in small lots, each in stretched condition, and thus be capable of being crowded into small space while undergoing drying and other treatment and of being handled with the minimum of difficulty and waste of time.

It has for a further object to provide a portable crate or truck in which to nest the skeins on the stretching means and then convey them into the drying-apartment.

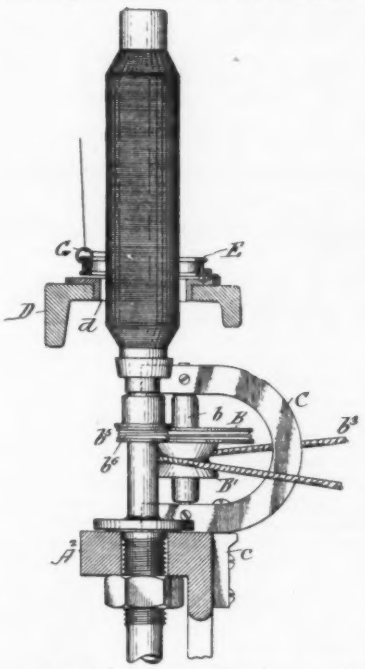
MEASURING AND PROTECTING Means for Fabrics. 795,741. Daniel B. Strickland, River Forest, Ill.

PILE FABRIC. Looped and Cut. 795,354. John Lowrie, Bridgnorth, England, assignor of one-half to H. & M. Southwell, Bridgnorth, England.

SPINNING MECHANISM. 795,813. John J. Buckley, Thomas P. McGinn and John A. Rogan, Plymouth, Mass.

This invention relates especially to means for mounting the traveler-eye by which a greater amount of work can be obtained from each spindle than from any machine now known and at a less expenditure of power.

The invention will be understood by reference to the drawing which is a vertical section of a



portion of a spinning-frame, showing a spindle and a section of the ring and of its supporting-rail and indicating also the means for rotating the spindle in elevation.

It will be noted that the power-disk B is made of considerably larger diameter than the diameter of the spindle-whirls b^3, and that the power-disk being rotated from the drum at substantially the speed which is now given to the spindles in machines heretofore built, the spindles themselves may be rotated at considerably greater speed than heretofore.

LOOM STOP MOTION. 795,364. Felix O'Donnell, Pawtucket, R. I., assignor of one-half to Susan A. Brown, Pawtucket, R. I.

LOOM TEMPORARY CLOTH ROLL Support. 795,555. Enoch H. Smith, Belton, S. C., assignor to Draper Co., Hopedale, Mass.

LOOM THREADING Machine. Carpet. 796,209. Hugo Heyman, Gothenberg, Sweden.

LOOM WARP STOP MOTION. 796,693. William H. Baker, Central Falls, R. I.

LOOM WARP STOP MOTION. 796,563. George E. Chandler, Taunton, Mass., assignor to Mason Machine Works, Taunton, Mass.

LOOM WARP STOP MOTION, 796,101. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM WARP STOP MOTION. 796,692. William H. Baker, Central Falls, R. I.

LOOMS FOR WEAVING. Flange of Warp Beams Used in 796,409. William Blackburn, Skipton, Eng.

LOOM. Weft Replenishing Mechanism. 796,882. Albert Walker, Arthur Walker and George Walker, Norwood Green, England.

LOOM. Weft Replenishing. 796,950. Albert Walker, Arthur Walker and George Walker, Norwood Green, England.

LOOM WEFT STOP MOTION. 795,345. Auguste Dom, Manville, R. I.

LOOM for Weaving Looped and Cut Pile Fabrics. 795,353. John Lowrie, Bridgnorth, England.

SHUTTLE. Automatic or Self Threading. 795,427. Herbert Chadwick, Rushton, and William Gerrard, Bolton, England, assignors to Draper Co., Hopedale, Mass.

SPINNING, DOUBLING or Twisting Yarns or Threads. 796,716. William Gaskells, Crosshills, England.

This invention relates to machines for spinning, doubling and twisting yarns or threads of fibrous substances, and consists in so constructing the spindles or parts in connection therewith that they are enabled to perform their functions at a considerably increased rate of speed as compared with others of the same class, and the resultant yarns are more even in thickness and smoother than are those as heretofore produced. The spindles or other parts are further rotated at a variable rate of speed, as is required when winding the yarns on the varied diameters of cops or bobbins mounted on said spindles.

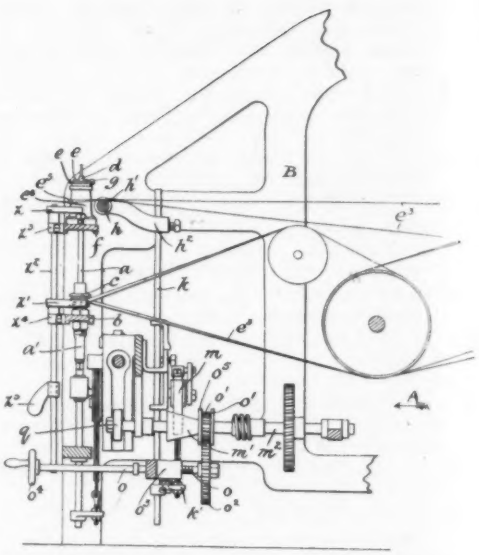
SPINNING MACHINE. 795,814. John J. Buckley, Thomas P. McGinn and John A. Rogan, Plymouth, Mass.

SPINNING MACHINE Driving Cylinder. 797,166. John W. Anderson, Pawtucket, R. I.

SPINNING MACHINE Stop Motion. 795,764. John E. Goodhardt, Rensselaer, N. Y., assignor of one-half to Willis E. Boyce, Rensselaer, N. Y.

SPINNING OR TWISTING Machine. 795,476. Victor Belanger, Seaview, Mass., assignor to Rotary Ring Spinning Co., Boston, Mass.

SPINNING OR TWISTING Machine Thread Board. 795,769. Lewis T. Houghton, Worcester, Mass.



SPINNING AND WINDING Mechanism. 795,981. Charles W. Hubbard, Boston, Mass.

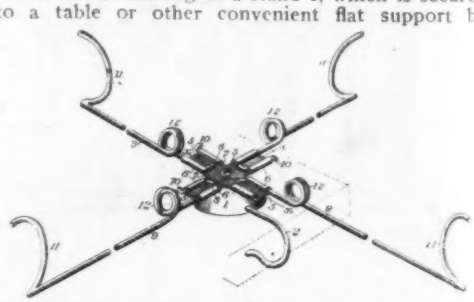
WOOL. Separating Extractive and Adhesive Matter from 796,530. Alfred P. Quackenbos, Providence, R. I.

YARN FOR SHORT FIBRE Material. Manufacturing. 795,776. Rudolf Kron, Golzern, Germany.

YARN REEL. 796,962. Lewis F. Earl, Philadelphia, Pa.

This invention is an improvement in yarn-reels and consists in improved means for supporting the hank of yarn adjustably and for permitting the removal of the yarn readily therefrom.

The illustration represents a perspective view of the device consisting of a stand 1, which is secured to a table or other convenient flat support by



spring-clamp, 2. Upon the top and approximately at the centre of the stand, 1, is rotatably secured, by means of screw 3, the plate or support 4, which is shown in the form of a cross having arms 5 5, whose sides, 6, are turned upwardly and inwardly to form guides, 7. Within these guides are sprung the inner U-shaped ends, 8, of yarn-supporting arms, 9, which ends are slightly larger than the guides and terminate in stops, 10, so that they may be sprung, but not pass through, holding the arms securely in place.

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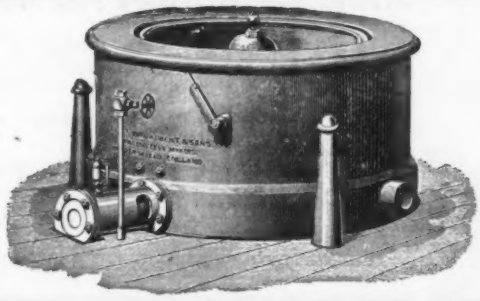

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FALL RIVER, MASS., May 3d, 1905.

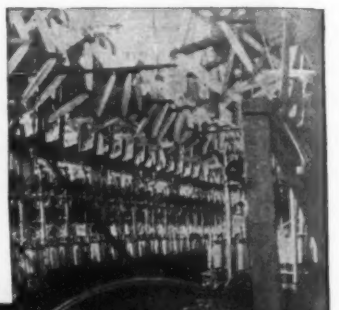
Cling-Surface Co.,
Boston Branch, 170 Summer Street, Boston, Mass.

Gentlemen: We are pleased to give you our experience with Cling-Surface. We have always known that a slack belt means money saved. To gain this end we used many dressings, but none of them would do the work for more than a few days without another application of the dressing. We decided to run a tight belt rather than put an idler on the arc. Cling-Surface was brought to our attention and we gave it a trial, with the result that we put a new main belt in, first giving it a thorough treatment on both sides with Cling-Surface. Result: we have the easiest running belt; least wear of counter, motor and hangers in this section. Our main belt is today in perfect condition. We have never had the least trouble with it. The same lacings still hold where we put them two years ago. Our other belts show the same perfect condition.

Our belt (shown in picture) runs 1200 feet per minute and is belted from a 25 h. p. motor, 6-inch pulley, to a counter 35-inch pulley. Distance between centers, 10 feet. The belt, which is a 6-inch double, takes the place of an 8-inch belt we took off, and does more work, with less power, than the old one. We will stand back of our statement.

We have had many men who were conversant with the advantages of easy running belts, see our belts, and their opinion is that we have perfect running belts. We, therefore, after giving Cling-Surface two years' trial, and use, to our entire satisfaction, recommend it as a power, labor and worry saver.

HANSCOM BROS.



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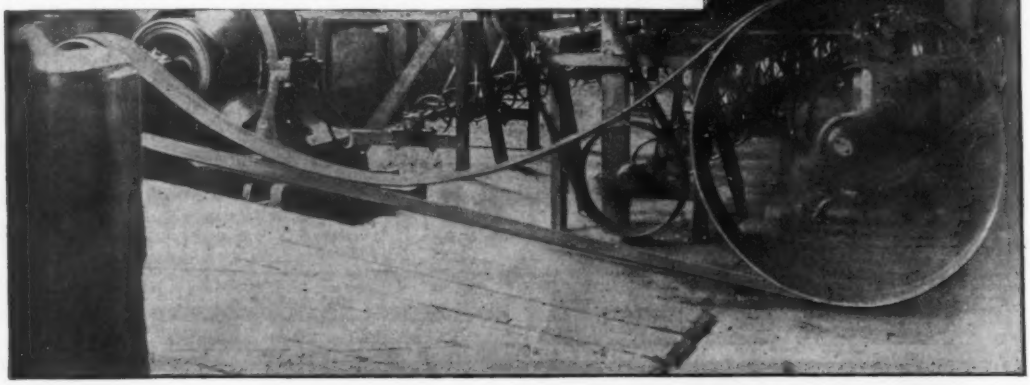

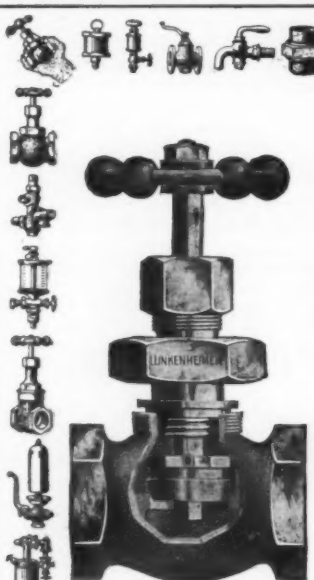

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3 T W R

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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Suck, Adolph.

Auditors.
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Pawtucket Dyeing & Bleaching Co.
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General Electric Co.
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Westinghouse Electric & Mfg. Co.

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Cohoes Foundry & Machine Co.
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Scaife, W. B. & Sons.

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Felt Hardeners.
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Norwood Engineering Co.
Phila. Water Purification Co., The.
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Fire Box Blocks.
McLeod & Henry Co.

Fire Box Blocks, "Steel Mixture."
McLeod & Henry Co.

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Fire Extinguishers.
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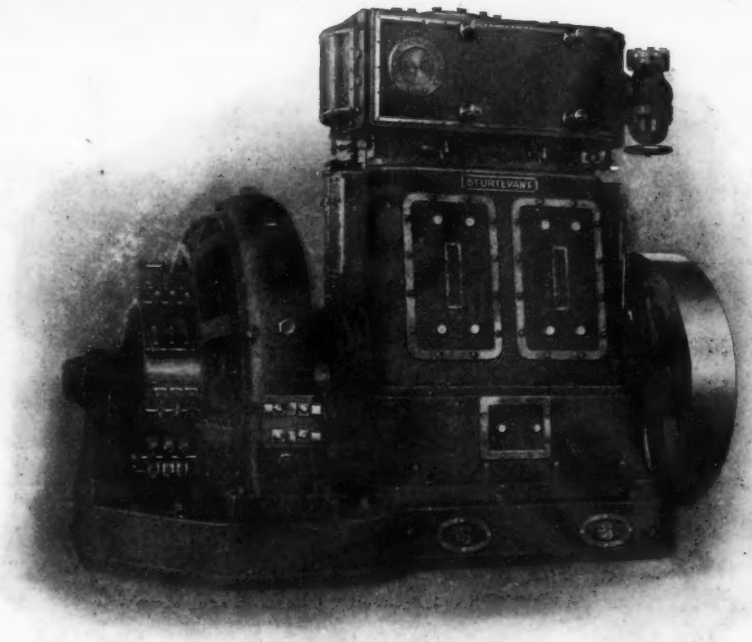
OVER 86% COMBINED EEFICIENCY



THIS 100 K. W. SET is the largest of a series of five, ranging from 17½ to 100 K. W. Both engine and generator are products of the Sturtevant Works.

The Engine, of the vertical cross compound type, is built in strict accordance with the severe requirements of the U. S. Navy Department, Bureau of Equipment. It is entirely enclosed, has water shed partition, forced lubrication, and a water consumption of 31 lbs. per kilowatt hour, condensing, at 150 lbs. steam and 350 revolutions per minute.

The Generator is conservatively rated, has heavy overload capacity and improved ventilation which reduces the temperature rise to a minimum.

The set complete weighs only 21,200 lbs., is only 115 ins. long, 70 ins. wide and 94 ins. high.

B. F. STURTEVANT CO., BOSTON, MASS.

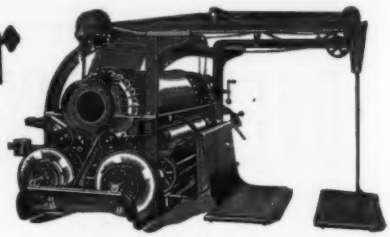
General Office and Works, Hyde Park, Mass.

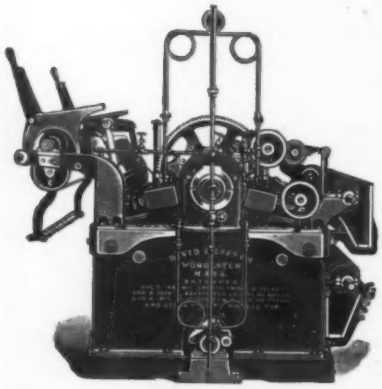
New York Philadelphia Chicago London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc. 458

David Gessner

Worcester, Mass.

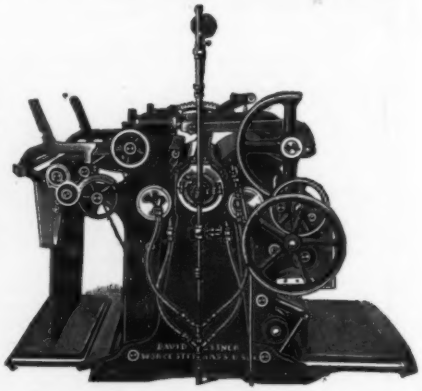




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.

Garnetts.
Garnett, P. & C., Ltd.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
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Gas Exhausters.
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Lunkenheimer Co.
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Shutte & Koerting Co.

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CROMPTON-THAYER LOOM COMPANY
MANUFACTURERS OF
FANCY LOOMS
For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.
DOBBIES, BOX MOTIONS AND SUPPLIES.
Works and Offices: 677 Cambridge Street, Worcester, Mass.
Alexander & Garsed, Southern Agents.

Knitting Needles and Supplies – cont.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Treat, Orion.
Wardwell Needle Co.
Labeling Machines.
Beck, Chas., Paper Co., Ltd.
Lamps, Incandescent.
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Sawyer-Mann Electric Co.
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Stephenson Mfg. Co.
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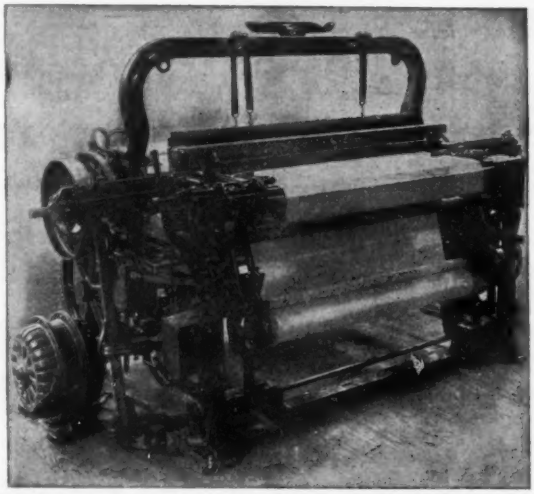

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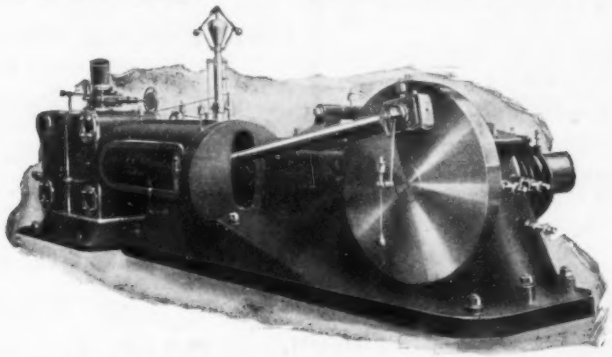

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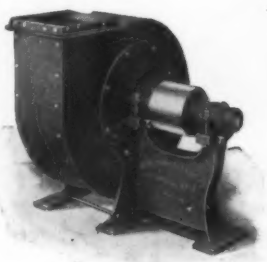

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Same rates as Wants, For Sale, etc. Manufacturers will be furnished, without charge, with the names of suitable men who are entered on our list, and can usually supply their wants in this way.

WANTED.

One Spinning Overseer, cotton, yarns 20 to 40, 28,000 spindles, convenient and healthy location, just outside large Southern city. Wages $3.50 per day, rent and fuel free. Southerner preferred. Address "Spinning Overseer," care Textile World Record, Boston, Mass.

WANTED.

Boss Finisher on Woolens
60 LOOM MILL.

Address "Keller," care Textile World Record, Boston, Mass.

Manager and Salesman Wanted for a first-class equipped woolen mill; a good chance for the right man to get an interest in the business. Write Geo. O. Shickler, Room 909, Arrott Bldg., Pittsburg, Pa.

WANTED.

One Carding Overseer, cotton, yarns 20 to 40, 28,000 spindles, convenient and healthy location, just outside of large Southern city. Wages $3.50 per day, rent and fuel free. Southerner preferred. Address "Carding Overseer," care of Textile World Record, Boston, Mass.

First-class Fixer wanted by a mill in the middle West. Must be competent to handle full automatic circular latch needle machines. Steady position for a good man. Give experience and state salary expected. Address "Knitter," Textile World Record, Boston, Mass.

Manager Wanted for Crash Mill, must be practical linen man who understands making crash toweling, buying materials and selling goods. Address, stating salary and references, Dundee Mill Co., 412 Medinah Temple, Chicago, Ill.

SITUATIONS WANTED.

Position Wanted.

A graduate of a textile weaving school, 23 years old, with six years experience, particularly in the **dress cloth and cotton weaving industry,** recently as yarn shipper, desires a position in any branch of weaving industry. Address "Weaving," care of the Textile World Record, Boston, Mass.

POSITION WANTED.

Boss Dyer and Bleacher of all grades of cotton, wool and worsteds, in skein, piece or wet. Well up in the underwear trade. A-1 reference, married. Address "Black," care Textile World Record, Boston, Mass.

Designer. Age 29; American. Understands Jacquards and would like to get into a mill making ladies' dress goods, etc. 3186, Textile World Record.

SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested.

COTTON SUPERINTENDENTS.

Assistant Superintendent, or a good overseer's position. Worked on all kinds of filling warp, colored hosiery, mercerized thread, twist and ply yarns. Taken a course in designing, combing and weaving in textile school. Age 35, married. First-class references. 1957, Textile World Record.

Cotton Superintendent, worked on all kinds of sheetings, sateens; all kinds of fancies, lenos and lappets, Jacquard, cotton and silk mixed. Age 35, first-class references. 1934, Textile World Record.

Cotton Superintendent or overseer of carding. Worked on all white goods yarns from 12s to 150s. Familiar with the Lowell, Saco & Pettee revolving flat cards. Age 37, married; first-class references. 1898, Textile World Record.

Cotton Superintendent of a yarn mill. Familiar with all kinds of yarns, from 20s to 120s. Used to all kinds of American and English machinery. Age 39, married; first-class references. 1364, Textile World Record.

Cotton Superintendent, or superintendent and designer. Worked on all kinds of cotton, from 20s to 150s. Also large experience on lenos and other fancy goods. Some knowledge of Jacquards. All kinds of cotton machinery. Age 39, married. 2080, Textile World Record.

Cotton Superintendent. Yarn or weaving mill. Worked on all kinds of yarn, from 10s to 170s. Also all kinds of plain cotton goods. Age 37, married. 1027, Textile World Record.

Cotton Superintendent. Worked on dress goods, shirtings, skirtings, ginghams, cotton flannels and blankets. Familiar with all kinds of cotton machinery. Age 37, married; first-class references. 1432, Textile World Record.

Cotton Superintendent, now employed, but wishes to change. Worked on all classes of fancy lawns, sateens, twills, drills, denims, tickings, awnings, ducks, chambray and fancy dress goods. Familiar with all kinds of machinery. Age 38, married. 1226, Textile World Record.

Cotton Superintendent of a yarn or cloth mill, carder or spinner. Worked on all classes of goods, prints, sheetings, shirtings, fine dress goods, ginghams; also yarns and twines of all kinds. Age 39; first-class references. 1236, Textile World Record.

Cotton Superintendent. Now employed as boss weaver. Wishes to change to better conditions. Has had charge in some of the leadings mills in the United States. Age 44, married; first-class references. 335, Textile World Record.

Cotton Superintendent. Has been boss carder, ring spinner and comber on all kinds of cotton yarns, hosiery yarn a specialty. First-class references. Age 44, married. 3025, Textile World Record.

Cotton Superintendent or assistant superintendent. Worked on linen and union towels and crashes. Father now taking full charge of the business, so he is not needed. Worked on Crompton & Knowles and other machinery used in toweling manufacture. Age 28, first-class reference. 1867, Textile World Record.

Cotton Superintendent wants position. Now engaged, but wishes to change to better condition. Worked on all kinds of plain cotton goods, prints, sheetings, ginghams, etc. Familiar with all kinds of cotton machinery. Will not go West, South or Canada. Age 43, married, first-class references. 2005, Textile World Record.

Superintendent or assistant of silk or cotton mill. Worked on plain and fancy ribbons and all classes of goods in broad silks, dress silks and tie silks, also Jacquard work. References. 3185, Textile World Record.

WOOLEN SUPERINTENDENTS.

Superintendent, age 34; American; married. Worked on fancy woolens. Not employed, and can take position at once. Will not go to Canada or West or South. Would take a good boss spinner place or assistant superintendent, but wants over $4.00 per day. 3104, Textile World Record.

Superintendent. Was eight years in every department and acted as assistant in England. Wants to get a start in this country. Would take position as assistant superintendent, designer, or assistant designer. Has had experience on high grades of plain and fancy woolens and worsteds, as well as army kerseys and cotton worsteds. 1841, Textile World Record.

Superintendent or Designer. Age 37. English. Married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

Superintendent. Worked on cassimeres, unions, satinets, overcoatings, horse goods, bed blankets, linings, etc. Understands stock mixing, picking and figuring. Has had full charge of mill. 3074, Textile World Record.

Superintendent of large experience in the manufacture of woolen and worsted fancies and suitings, is open to an engagement as superintendent or designer. Age 45; American; married. Good references. 1982, Textile World Record.

Woolen Mill Manager, formerly of Yorkshire, is open to take a similar position in the United States or Canada. 1976, Textile World Record.

General Manager, agent, superintendent or designer. Worked on everything from fine worsted to a blanket. Good experience. Aged 37; American; married. 3172, Textile World Record.

Superintendent or Designer. Age 37; American; married. All grades of woolens and also cotton warp goods. Will not go South or to Canada. 3124, Textile World Record.

Asst. Agent, superintendent or mechanical engineer in woolen or carpet mill of any kind. Age 30; married. Excellent references. 3178, Textile World Record.

Manager, superintendent or designer. Age 30; English; married. Experienced in England and in this country. Mohairs, all classes of worsted suitings, plain and fancy dress goods. 3184, Textile World Record.

Superintendent of worsted yarn plant or overseer of drawing and spinning. Worked on Australian, English, domestic woolens, mohair, alpaca, spun from 8s to 70s, also carpet yarn. Age 38; American; widower. First-class references. 3221, Textile World Record, Boston.

Superintendent or boss weaver. 15 years' experience in worsted, woolen and silk goods. Graduate of Philadelphia Textile School. 32 years old; married. Good manager of help. American. 3119, Textile World Record.

Woolen Superintendent of small mill or assistant superintendent in large mills, or boss finisher, by practical mill man raised in the business. Worked through card room, dressing and weave rooms, and all the departments of finishing. Overseer 20 years; strictly temperate; have family; Scotchman. 3200, Textile World Record.

Superintendent or designer in a woolen or worsted mill. Worked on fine worsted suitings, trouserings, woolen cheviots, meltons, kerseys, coverts, fancy cassimeres, cloakings and dress goods. First-class references. Age 27, married. 1974, Textile World Record.

COTTON CARDERS.

Carder in Cotton Mill. Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

Overseer of Carding Department. Age 38; English; married. Plain and fancy goods; both combed and carded, Cotton Sea Island, Peruvian, Egyptian, Peeler, etc. Good references. 3196, Textile World Record.

Secondhand Carding or card grinding in a large mill. Worked on all white and colored goods, cotton from 4s to 70s. Good references. Age 29; German; unmarried. 3217, Textile World Record, Boston, Mass.

Overseer Cotton Carding or Spinning desires position. Age 47; American; married. Is familiar with all the modern makes of English and American machinery, revolving top flat cards, single and double carding. 2073, Textile World Record.

Overseer of Cotton Carding or superintendent of a small mill. Worked on coarse and fine yarns from 10s to 170s, carded and combed. Will not go West, South or to Canada. Age 37, American. First-class references. 1027, Textile World Record.

Overseer of Cotton Carding. Worked on all kinds of yarn. At present employed in a large mill, but will change for a better position. Familiar with all kinds of machinery. Will not go South. 36 years of age, French. 1991, Textile World Record.

Superintendent or overseer of carding in a large mill. Worked on sheetings, ginghams. Will not go West. Familiar with all kinds of cotton machinery. 41 years of age, American. First-class references. 2021, Textile World Record.

Overseer of Cotton Carding. Worked on plain and fancy coarse and fine white goods. Wants only Rhode Island or Connecticut. 47 years of age, married. First-class references. 1884, Textile World Record.

COTTON SPINNERS.

Overseer of Ring Spinning, spooling, long chain beaming, slashing and drawing-in. All kinds of fancies, sheetings, etc. $3.00 per day up. 3202 Textile World Record.

Overseer of Ring Spinning. Aged 42; American; married. Ginghams, sheetings, awnings, denims, etc.; $3 to $4 per day. 3018, Textile World Record.

Overseer of Cotton Mule Spinning. Understands Mason and English makes of mules. Has worked in mule room sixteen years, five years as second hand and a year and a half as overseer. 28 years old; married; steady and temperate. Would like to get work in N. E. or New York states. Has worked on colored hosiery yarn and filling. 1822, Textile World Record.

Overseer of Cotton Spinning or superintendent of a small mill. Would accept any reasonable offer. Worked on all grades of cotton goods and cotton yarns from 20s to 100s. Familiar with all kinds of cotton machinery. 44 years of age, American, married. 1882, Textile World Record.

Overseer of Mule Spinning who has had a wide experience in large New England mills on yar ranging from 24's to 160's is open to a position. .. years old; American. Good references. 2003, Textile World Record.

Overseer of Spinning. Age 34; married. Good experience. 20s to 90s Egyptian and American cotton. 3125. Textile World Record.

Overseer Ring Spinning, spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans, grain bags. 3152, Textile World Record.

Overseer of Beaming or quilling. Will go anywhere. Has worked on white and colored cotton goods. First-class references. Age 45, married. 1162. Textile World Record.

Overseer or secondhand in preparatory department of long chain beaming, quilling, tape dressing, warping and spooling. A Scotchman; married. Will not go West or South. 3156, Textile World Record.

COTTON WEAVERS.

Overseer of Weaving. Good experience and reference. Worked on lawns, sheetings, sateens, dimities, fancies, etc. 3188, Textile World Record.

Overseer Cotton Weaving. Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

Overseer of plain cotton weaving. Age 27; American; married. Familiar with Whitin, Mason, Colvin and Draper looms. Worked on prints, sheetings, cambrics, lawns, twills, etc. 3143, Textile World Record.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Weaving. Worked on all kinds of cotton goods, plain and fancy, including Turkish and cotton towels, also fancy worsted dress goods. Age 39; English; married. 3236, Textile World Record.

Overseer of Weaving or loom fixing. Worked on cotton, woolen, silk. Used to Crompton & Knowles looms, both box and plan, Lewiston looms, Mason, Colvin, Whiting, Patterson, etc. Age 43; Scotch; married. 3216, Textile World Record, Boston.

Overseer of Weaving or designer. Lawns, sheetings, twills, sateens, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recomendation. 3063, Textile World Record.

Cotton Boss Weaver, or would accept a position as superintendent or assistant superintendent. Worked on all kinds of sheetings, shirtings, lawns, cambrics, ginghams, checks, stripes, union goods, awnings, ducks, light and heavy weight plain and fancy flannels. American, 39 years old. First-class references. Will go any place for a good position. 3257, Textile World Record.

Boss Weaver wants position. Very wide experience. White and colored, plain and fancy. Understands all kinds of looms. 335, Textile World Record.

DESIGNERS.

Overseer of Weaving or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation. 2051, Textile World Record.

Assistant Designer or assistant superintendent of woolen or worsted mill. A young man; American; unmarried. Men's wear, dress goods, silk brocades, damask, etc. 3160, Textile World Record.

Designer, woolen and cotton novelties. Used to fancy cassimere, ladies' dress goods, suitings and men's wear worsted, cotton and wool mixes. First-class references. Age 24; Scotch; single. 3212, Textile World Record, Boston.

Designer or boss weaver. Age 35; American; married. Worked on all kinds of worsteds, cheviots, men's wear, dress goods and coat linings. Used to Knowles and Crompton looms. First-class references. Can take position one week's notice. 3210 Textile World Record, Boston.

Designer or assistant designer. Worked on all kinds of sateens, fancy goods, dobbies and lenos. 21 years of age; American; single. First-class references. 3252, Textile World Record.

Designer, assistant designer or assistant superintendent. German. Woolen and worsted men's wear and ladies' dress goods. Experienced in Germany and a short time in this country. 3166, Textile World Record.

Designer or superintendent. Ginghams, crepe, jacquards, cycle tires, filter cloths, vesting cloth, etc. Good recommendations. Middle aged man; English; married. Address 3169, Textile World Record, Boston.

Designer or assistant superintendent. Worked on cotton warp flannel coverts, plain and fancy cotton warp, and all wool dress goods. First-class references. 3244, Textile World Record.

Jacquard Designer wants position or temporary work. Prefers designing for Jacquard blankets if possible. 3167, Textile World Record.

WOOLEN CARDERS.

Carder and Spinner. Been overseer 32 years, making every variety of cassimere, flannels, overcoatings, cloakings, dress goods, etc. Married; American. 3132, Textile World Record.

Overseer of Carding. Age 30; American married; Nearly all classes of goods. Good experience and references. Address 3170, Textile World Record, Boston.

Secondhand in wool card room. Age 23; American. Wool and cotton mixes. References. 3198, Textile World Record.

Second Hand of scouring and carding worsted in a large mill, or overseer in a small mill. Age 24; American; single. First-class references. 3246, Textile World Record.

Woolen Boss Carder. Worked on all classes of goods in hosiery and woolen mill. Familiar with Davis & Furber, Furbush & Cleveland cards; first-class references. Age 35, married. 1501, Textile World Record.

Woolen Boss Carder, or would accept a position as traveling machinist in setting up machinery. Worked on all classes of woolen goods, shoddy mixes, cotton mixes. Worked on Davis & Furber, Cleveland, Lombard, Platt Bros., Furbush & Smith machines. First-class references; age 47; married. 1578, Textile World Record.

Woolen Boss Carder. Worked on all classes of woolen goods, hosiery, dress goods, felts, blankets, cassimeres, satinets, slasher and roller cloth. Age 38; first-class references. Could take a position at short notice. 3258, Textile World Record.

Second Hand in woolen card room. Worked on all kinds of woolens, shoddy and cotton mixes; first-class references. Would take a position in one week's notice. American, age 20. 3241, Textile World Record.

Woolen Boss Carder. Worked on all classes of woolen goods, all wool, all cotton, and cotton and woolen and shoddy mixes. Familiar with all kinds of American carding machinery. First-class references. Age 44, married. 1953, Textile World Record.

Boss Carder in a woolen mill. Worked on all wools, cotton and shoddy mixes, and is familiar with Davis & Furber and Cleveland cards, and all makes of rub aprons and different rub rolls. 29 years of age, American, first-class references. No. 3284, Textile World Record, Boston.

WOOLEN SPINNERS.

Boss Woolen Spinner. Would take a good secondhand job. Used to Davis & Furber and Johnson & Bassett machines. Worked on all kinds of goods. First-class references. 3215, Textile World Record, Boston.

Woolen Boss Spinner. Worked on all kinds of woolen goods. Familiar with Davis & Furber, Johnson & Bassett and Woonsocket mules. A first-class fixer. Could take a position at once. American; age 48. 3266, Textile World Record.

Woolen Boss Spinner, or would accept a good second-hand position. Familiar with all kinds of American spinning machinery; Davis & Furber, Johnson & Bassett, English mules, Curtis and Platt. First-class references; age 48, English. Could take a position at once. 589. Textile World Record.

Woolen Boss Spinner. Worked on all kinds of woolen yarns; worked on Davis & Furber, Johnson & Bassett, Bridesburg, Platt, and Lees & Moulton machinery. First-class references; English; 45 years of age. 3223, Textile World Record.

Boss Spinner in a woolen mill.. 32 years of age, American, familiar with Davis & Furber, Johnson & Bassett and English mules and twisters. First-class references. No. 3275, Textile World Record, Boston.

Second Hand in Spinning Room or fixer. Worked on all kinds of woolen and cotton mixed yarns. Familiar with Davis & Furber and Johnson & Bassett mules. 30 years of age, married, American. No. 3282, Textile World Record, Boston.

Woolen Superintendent or overseer of combing, drawing and spinning. Worked on botanies, medium and long wools. Age 44, first-class references. 3086, Textile World Record.

WOOLEN WEAVERS.

Boss Weaver, second hand or loom fixer. Age 30; married. Wants $3 per day. Men's wear, dress goods and all kinds of fancy worsteds. Crompton & Knowles looms. Reference. 3182, Textile World Record.

Boss Weaver and designer. All grades of fancy dress goods, woolen and worsted, cotton and cotton mix kerseys, coverts and venetians. Plain and fancy men's wear. 3181, Textile World Record.

Woolen Boss Weaver. Worked on worsteds, woolens of all kinds, also dress goods. American; 38 years of age; married. 3231, Textile World Record.

Woolen Boss Weaver. Worked on plain and fancy piece dyed worsted, woolen, plain and fancy flannels, also fancy mercerized rain cloths. 29 years of age; Canadian; married. First-class references. 3251, Textile World Record.

Young Man, American, wants position as boss weaver or assistant superintendent. Has worked on fancy worsteds, cassimeres and cheviots. Can also design. 1712, Textile World Record.

Overseer of Weaving, or would consider a good loom fixing job in a woolen mill. Age 47; Protestant; good references. 3247, Textile World Record.

Overseer of Weaving or designer. Familiar with all kinds of dress goods, lenos, lappets or any kind of fancy Jacquard weaving. Understands all kinds of English and American machinery. Age 46, English. First-class references. 3267, Textile World Record.

Overseer of Weaving. Worked on worsteds, cassimeres, dress goods, and all kinds of woolen goods. Crompton & Knowles looms. First-class references; American. 45 years of age. 3262, Textile World Record.

Boss Weaver in a woolen mill. Worked for the past twenty years in one of the best woolen mills in Massachusetts and eight years in the same mill for a former company. 57 years of age, married, English, first-class references. No. 3270, Textile World Record, Boston.

Assistant Designer or Boss Weaver in a woolen mill, 25 years of age, for two years was in a first-class Austrian textile school and passed the examination with distinction. Has first-class references, an Austrian and single. No. 3277, Textile World Record, Boston.

Loom Boss or designer. Familiar with blankets, flannels, skirtings, worsteds, woolens and piece dyes. Familiar with Crompton & Knowles jacquard and dobby looms. Age 33, married, American. 3150, Textile World Record.

Overseer of Weaving, or weaving and designing in first-class mill wants position. Will not go South or to Canada. $4.00 per day. Can furnish excellent references. 3056, Textile World Record, Boston.

MISCELLANEOUS.

Overseer of dressing. American. Married. Wool, worsted and cotton worsteds. 3165, Textile World Record.

Master Mechanic wishes position in the North. 35 years old; married. Worked 15 years on repairs. Wants $3.50 per day. Has license for running engines and boilers Understands all kinds of water wheels and care of same, dynamos and electric lights and also gas houses, and a good knowledge of building, all kinds of wood work and piping and blacksmithing. Understands cotton mill repairs as good as the best man at such work. 2025, Textile World Record.

Overseer in winding, spooling and thread dressing. Age 34; Scotch; married. Also had some experience in beaming. Shoe and corset lacing, plain and fancy braids and tapes, fine ginghams and dress goods. 3192, Textile World Record.

Master Mechanic in cotton or woolen mill or cotton finishing plant. American; married. Good experience and reference. 3189, Textile World Record.

DYERS.

Dyer. Worked on piece dyes, wool, cotton, shoddy yarns, rags and union dyes and carbonizing. Wants place at once. Good experience and references. 3092, Textile World Record.

Dyer on all grades of worsteds, kerseys, broadcloths, knit goods of all descriptions, alpacas, mohair lining, ladies' dress goods, worsted yarn, cotton yarn, wool and cotton raw stock. Age 41; English-American. 3214, Textile World Record, Boston.

Secondhand Dyer. Yarn and cotton pieces. Experienced on all classes of goods on a small scale. Age 23; unmarried. 3171, Textile World Record, Boston.

Overseer of Dyeing on all classes of worsted, woolen and union goods. Can take position on two weeks' notice. Age 26; American; single. First-class references. 3224, Textile World Record, Boston.

Secondhand in dyehouse. Would accept a position as salesman. Worked in first-class worsted and woolen mills. Age 26; American; unmarried. Can take place on short notice. 3211, Textile World Record, Boston.

Overseer of dyeing and finishing, all kinds of worsteds, woolen, fancy mix, indigoes, and raw stock. 36 years of age; married. 3233, Textile World Record.

Boss Dyer in a woolen mill. Has been for the past ten years with one of the largest woolen mills in the Middle States; has first-class references; 47 years of age, American. No. 3286, Textile World Record, Boston.

Boss Dyer in a woolen mill. Has been for twenty years boss dyer for one company, and is familiar with hosiery dyeing. 47 years of age, American, first-class references. No. 3278, Textile World Record, Boston.

Foreman for Aniline Black Department, all silks, cotton, black and taffeta umbrella goods. Age 32; English; married; first class references. 3238 Textile World Record.

FINISHERS.

Overseer of Finishing Room. Cut and full fashioned balbriggan ribbed goods. Familiar with Union Special, Wheeler & Wilson, Willcox & Gibbs, Merrow, etc. Excellent references. Address 3168, Textile World Record, Boston.

Boss Finisher of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references. 1958, Textile World Record.

Overseer of Finishing. Age 32; American. Woolen and worsteds, suitings, coatings, cloakings, cassimeres, cheviots, meltons, frieze, etc. 2070, Textile World Record.

Boss Finisher. American. Cheviots, cassimeres, beavers, dress goods, etc. Wants $2.50 to $3 per day. 3123, Textile World Record.

Woolen Boss Finisher. Worked on thibets, cotton and wool warps, satinets, unions, cheviots, kerseys, meltons and cassimeres. Aged 40. Will not go West or to Canada. American. First-class references. 3077, Textile World Record.

Woolen Boss Finisher in a medium-sized mill or second-hand in a large mill. Worked on cassimeres, cheviots, rain cloth, silk noils, dress goods, plain and fancy, piece dyed worsteds and cotton worsteds. Familiar with all kinds of finishing machinery, including crabbing machines. Will go anywhere for a good position. American, 23 years of age, good references. 3263, Textile World Record.

Boss Finisher, or would take a second-hand position or wet finishing. Familiar with all kinds woolen and worsted goods, both steam and dry finishing. Age 45, English, first-class references. 2061, Textile World Record.

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Cotton Carding, Spinning and Plain Weaving	Woolen Carding, Spinning and Weaving
Yarn Reeling, Winding and Warping	Woolen Warp Preparation and Weaving
Complete Textile Designing	Worsted Warp Preparation and Weaving
Theory of Textile Designing	

Name.....
Occupation.....*Age*.....
House Address.....
Business Address.....
City..... *State*.....

KNITTERS.

Superintendent of underwear or boss knitter. Worked on all kinds of underwear from fine to coarse. Worked on all kinds of knitting machinery. Would prefer a position in the West. 51 years of age, English, married. Address 3176, Textile World Record, Boston.

Manager or assistant, or executive position in an underwear mill. Worked on fine wool and cotton knit underwear from raw material to finished product. Some knowledge of hosiery. Will not go West or South. 54 years of age, American, married. 3109, Textile World Record, Boston.

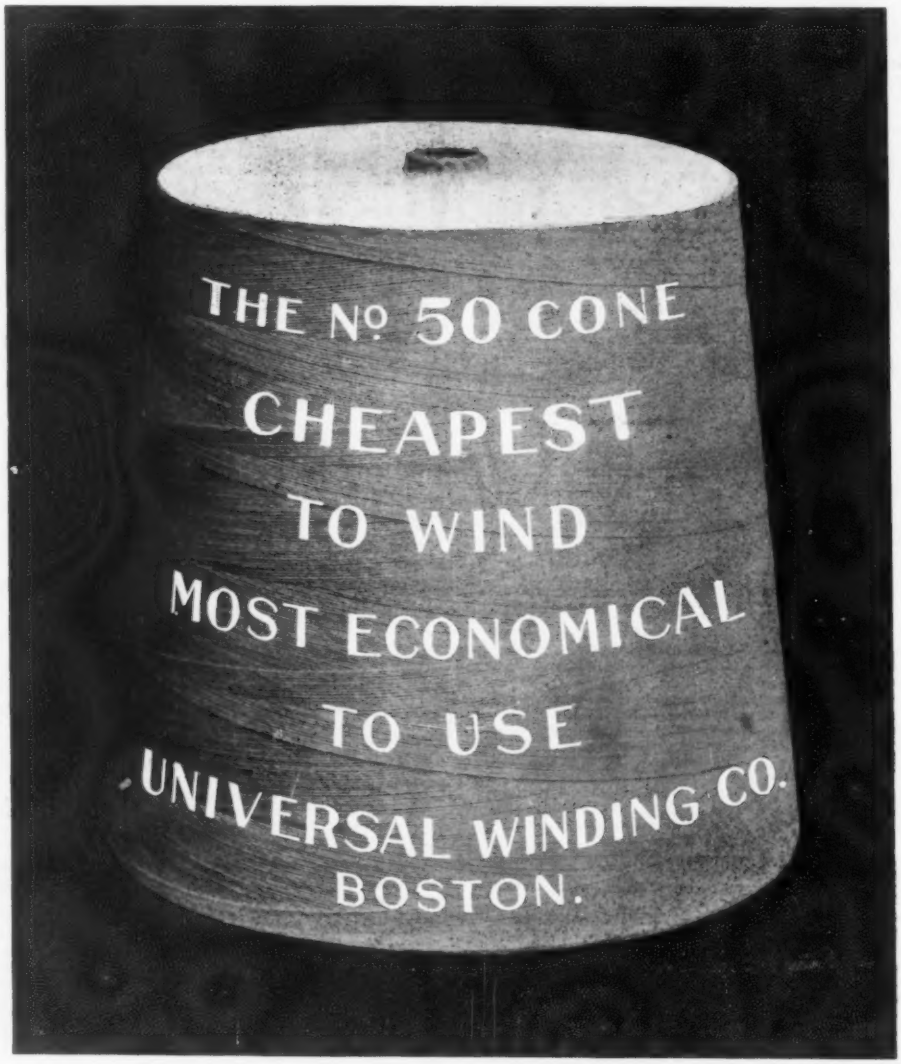
Boss Knitter in underwear mill. Worked on all gauges as fine as 28, wool, cotton and silk. Latch and spring needle machines. 39 years of age, American, married. 1669, Textile World Record, Boston, Mass.

Superintendent or boss knitter. Worked on latch needle goods, light and heavy weight underwear only. 38 years of age, American, married. 1812, Textile World Record, Boston, Mass.

Superintendent or boss knitter. Worked on men's fine balbriggan, ladies', men's and children's wool underwear. Familiar with all kinds of knitting machinery. 27 years of age, American. 3259, Textile World Record, Boston, Mass.

Superintendent of a knitting mill. Worked on cotton, wool, merino and silk, plain and ribbed hosiery and underwear. Will not go South or West. First-class references. American, 42 years old, married. 1722, Textile World Record, Boston.

Superintendent or overseer in a knitting mill. Worked on all grades and weights of hosiery and ladies' ribbed underwear. Familiar with all kinds of knitting machinery. 49 years old, American, married. 598, Textile World Record, Boston, Mass.


THE No. 50 CONE
CHEAPEST
TO WIND
MOST ECONOMICAL
TO USE
UNIVERSAL WINDING CO.
BOSTON.

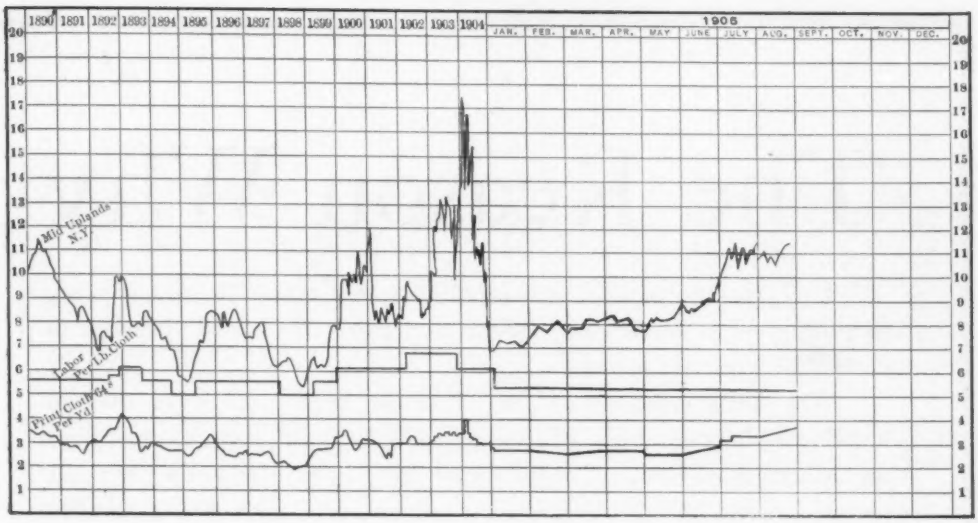

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904
1905
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid Uplands N.Y.
Labor Per Lb. Cloth
Print Cloths Per Yd.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

Cotton Market.

After a slight reaction cotton during the past month has advanced until at this writing middling upland is selling at 11 3/8 cents. The strength of the market is due largely to the knowledge that more cotton is being used by the mills than at any other period in the history of the world. The mills of Lancashire are rushed with business and new plants are being projected and pushed to completion in order to catch some of the large profits which established concerns are making.

Again the lack of confidence in both official and unofficial reports as to the new crop has to a considerable extent eliminated that factor from consideration. The Managing Committee of the International Cotton Congress issued early in August at an emergency meeting a call to the spinners of Europe and America to refrain from buying American cotton during the next three months. To what extent this advice has been followed cannot be determined. The price of cotton since the call was issued has advanced sharply.

The cotton goods market is very strong. There is a pronounced scarcity of many lines of goods. Prices have advanced and although buyers have fought hard against the advance they have been forced to surrender and pay the price which the demand has established. They have tried to confine their transactions to spot business, but the rise in cotton and the brisk demand for goods from the retailers have been too much even for these tactics. Buyers have become alarmed lest they be left without merchandise and as a consequence contracts for future deliveries have been freely placed. The production of the mills is covered for several months and the prospect is that this condition will be still further accentuated in the near future.

The weather in the cotton belt has been favorable, but the trade is at sea regarding the size of the coming crop. Until actual receipts have become large enough to form a basis for an estimate the bull factors which prevail in all other directions are likely to control the course of the market. The movement into sight from Sept. 1 to date, as reported by the Chronicle for the past six years, is as follows:

1899-00	9,154,521 bales
1900-01	10,477,516 bales
1901-02	10,565,137 bales
1902-03	10,728,682 bales
1903-04	10,153,964 bales
1904-05	13,560,660 bales

This period lacks but a week of a full year and the figures for 1904-5 can be taken as representing approximately the size of the last crop.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.

Phone Connections. Works, 2046-48 Amber Street. PHILADELPHIA, PA.

The Reason Why

Every scourer of wool or finished cloth has often felt that stinging or burning effect produced by soda ash or pure alkali when brought in contact with the wet hands.

When these materials will so affect the hands which are used to handle all kinds of things, you readily see they will more easily injure the delicate wool fibre. The little wool fibres once injured, the harm can never be remedied. It is because by being scoured with strong alkalies that you so many times find the wool in the finished cloth poorer than it was in the raw material.

Wyandotte Textile Soda

is a scientifically made wool scouring soda. It enables the Mill Man to scour a raw wool and the finished cloth thoroughly and inexpensively with no injury to the delicate wool fibre.

It enables him to take the wool or cloth from the scouring vat in a soft, lofty condition and of a snowy whiteness.

These, are facts which, we believe will interest you. If you will write us, we will be pleased to come to your mill and prove our statements.

None Genuine except with a card bearing this Trade Mark

In Every Package.

The J. B. Ford Co.,

SOLE MANUFACTURERS,

Wyandotte, Mich.

THIS SODA WAS AWARDED THE HIGHEST PRIZE—GOLD MEDAL—AT THE ST. LOUIS EXPOSITION.

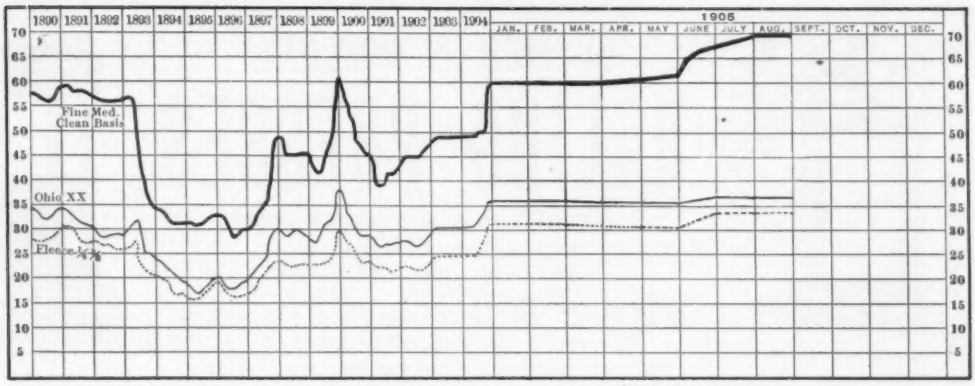


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The same authority estimates the world's visible stock of cotton on Aug. 25 at 2,571,826 bales, as compared with 1,153,569 bales for the corresponding date in 1904, 1,207,270 bales in 1903, and 1,346,468 bales in 1902.

Wool Market.

The supply of wool is far below the demand and prices have not advanced further simply because they have reached the present limit of the purchasing power of the mill. The demand for worsted goods has made it impossible for the manufacturer to substitute shoddy for wool to the same extent as when carded woolen goods were in demand. Another relief valve is found in the use of cotton yarn and as a consequence the demand for the worsted finish in cheap goods is being satisfied with cotton worsteds.

There have been large sales of wool, especially in territories, which have gone far in reducing the stocks for sale. Large buyers, among whom are some who, it was believed, were well supplied with raw material, have been in the market looking for additional supplies. It is an interesting situation and speculation is rife as to how far the pressure of demand will carry wool prices. Imports of wool are very heavy, having reached 249,135,746 lbs. for the year ending last June, a record exceeded only once in the history of the American trade, and that being in 1897, under free wool, just before the restoration of the wool duty.

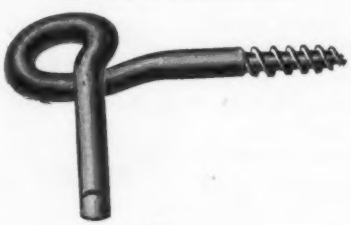
The foreign market is firm, with an advancing tendency which is ascribed to the heavy purchases for American account. The new clip in Australia is reported to be promising. Goldsbrough, Mort & Co., Melbourne, report the exports of wool from Australia for the year ending June, 1905, at 1,201,780 bales, as compared with 1,001,726 bales for the preceding year. New Zealand exports for the same periods also show an increase, amounting to 10,677 bales.

MITCHELL-BISSELL CO.

38 MURRAY STREET, NEW YORK.

PORCELAIN, ENAMELLED IRON AND GLASS FOR TEXTILE MACHINERY.

Right Angle Pontiac Guide.



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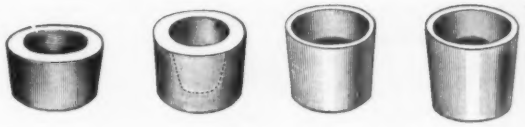

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Creel Steps.

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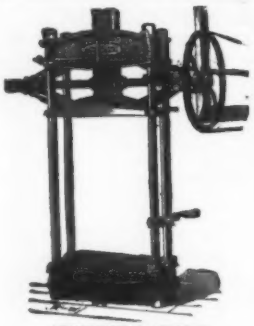


KNUCKLE JOINT.

BOOMER & BOSCHERT

BALING PRESSES

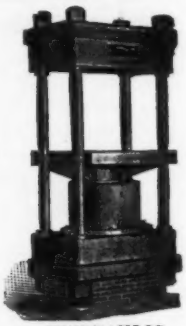
ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.

Southern Agent, A. H. WASHBURN, Charlotte, N. C.



HYDRAULIC.

DE HAVEN ALL-STEEL RING TRAVELERS

The only All Steel Ring Traveler ever made.

The reign of the Ring Traveler Octopus is over.
Independence and Progressive Methods have clipped his claws.

The DE HAVEN ALL-STEEL TRAVELERS save Cotton, Time and Money. Use them and pay dividends.

MANUFACTURED ONLY BY DE HAVEN MANUFACTURING COMPANY, No. 99-83-84 COLUMBIA HEIGHTS BROOKLYN, N. Y.

The Success of the Mill Depends on its Travelers.

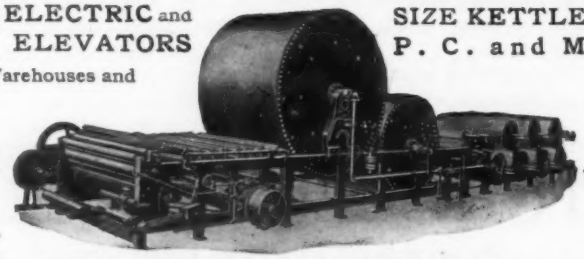
The COHOES SLASHER.

BELT-DRIVEN, ELECTRIC and HAND-POWER ELEVATORS

For Cotton Mills, Warehouses and Factories.

PULLEY BLOCKS.

OVERHEAD TRACKS.



SIZE KETTLES. REPAIRS for P. C. and M. MULES and EMPIRE LOOMS

WATERWHEEL GOVERNORS.

The COHOES IRON FOUNDRY & MACHINE CO., Cohoes, N. Y.

For 25 YEARS We have held OUR REPUTATION as Progressive Manufacturers. Do not forget this when ordering GAGES.

ORIGINAL SINGLE BELL CHIME WHISTLE

Harmonious
Far Reaching
Pleasing.

A Truthful Gage is the only GOOD GAGE.

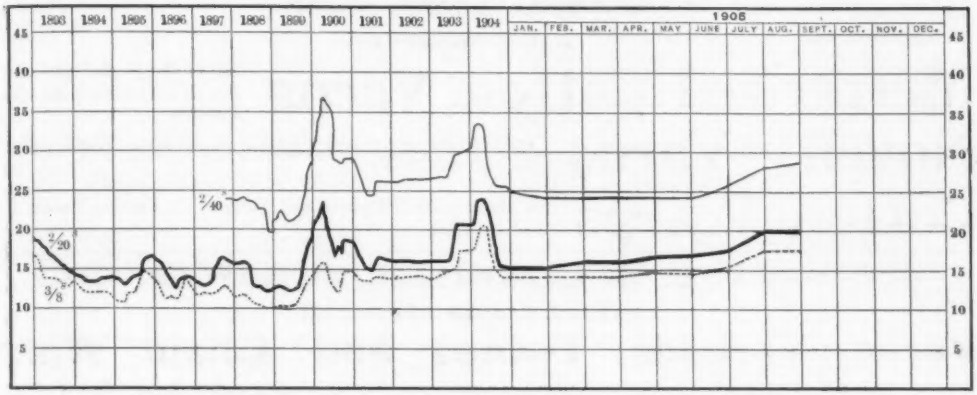
This Company manufactures, besides the above a large variety of articles used in connection with steam engines and boilers, all of which are standard quality, and may be relied upon. *Send for Catalogue.*

CROSBY STEAM GAGE & VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

It is a seller's market. Weavers and knitters must have yarn and a large business is being done at full prices. There are indications in spots that the high prices for yarn have restricted the volume of business, but in spite of this the total transactions have been very heavy. Buyers of yarn are looking for profits and if these can be obtained the price paid for yarn is immaterial. The strong situation in the markets for both woven and knit goods is making it possible for the mills to obtain a profit more easily with high priced yarn than was the case some time ago with cheaper yarn.

Business is good throughout the whole country and especially good in the South and West. Salesmen return with well filled order books and glowing accounts of the business activity in those sections. In the South this is due largely to the increased income from the sale of cotton. Thus an advance in the raw material, while it increases the cost of the finished goods, makes the consumer better able to buy goods at the advance than at the old prices. This explains the satisfactory situation in the spinning, weaving and knitting mills despite the advance in the cost of raw cotton.

While the yarn trade is good there is a reluctance on the part of buyers to enter into contracts for future delivery. All are running as close to the wind as possible in order to be in a position to adapt themselves quickly to any change of wind or current. Cotton manufacturing is a highly speculative business at best and just now the uncertain factors are more numerous and important than usual. We quote as follows:

Eastern Cops.

6's	18
8's	18¾
10's	19¼
14's	20¼
16's	20¾
18's	21¼
20's	21¾
22's	22¼
24's	22¾
26's	23¼
30's	24¼
34's	25¼
36's	25¾
40's	26½

On cones, ¾c. more up to 14's; 1c. more from 15's to 22's; 1½c. from 23's to 35's, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12's	21
14's	21½
18's	22½
20's	23½
24's	24½
26's	25½
30's	27½
36's	29
40's	32
45's	35
50's	37
55's	41
60's	44

Eastern Two-Ply Warps, Carded Peeler.

2/30's	28
2/36's	29½
2/40's	32
2/45's	35
2/50's	38
2/60's	44

Egyptian Weaving Yarns.
Single Skeins Combed.

30's	35
36's	37
40's	39
45's	43
50's	48
55's	51
60's	54
70's	57

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

WALCOTT & CAMPBELL SPINNING COMPANY

Fancy Hosiery Yarns

IN ALL COLORS

New York Mills, Oneida Co., New York.

Wiscasset Mills Co. | Patterson Manfg. Co.
Efrid Manfg. Co. | Tuscorora Cotton Mill.

HIGH GRADE HOSIERY YARN

White and Colors. All Numbers.

Sewing Twines on Cones and Tubes.

SPECIALTIES IN WEAVING YARN.

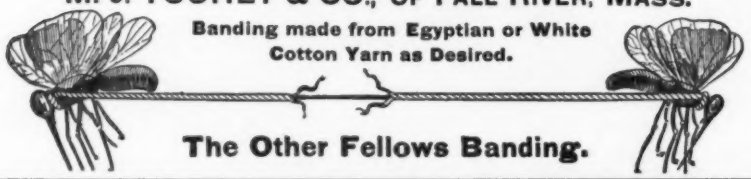
Black and white. Double and twist for woolen trade.

CANNON MILLS, 55 Leonard St New York.

THESE MULES CANNOT BREAK THE BANDING —MADE BY—

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.



The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

4s to 60s.

HOUSATONIC, MASS.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

Two, and Three Ply Skeins, Combed.

30's	40
36's	42
40's	44
45's	47
50's	50
55's	52
60's	55
70's	58

Philadelphia Yarn Market.

The cotton market has developed a remarkable tendency to go contrary to expectations of the majority of the trade. During the spring most of the buyers of cotton yarn were inclined to the belief that cotton would be low this summer, basing their opinion on the fact that there would be considerable cotton carried over, which with the new crop would keep prices low. However, the course of events the past two months has shown the fallacy of this conclusion. It looks as if the Southern planters and cotton men would just as soon have cotton on hand as to have the money in bank. Yarns have now reached a price at which they cannot be used at a profit by certain classes of trade. The hosiery and underwear manufacturers are unable to get an adequate advance on their goods and high priced yarns restrict consumption.

Prices at present are at the highest point for this year, and are being held at the following figures, with demand fair for quick delivery.

Southern frame spun cones:—

7's and Coarser	18
8's and 9's	18
10's	18½
12's	19
14's	19½
16's	20
18's	20½
20's	21
22's	21½
24's	22
26's	22½
30's	23
40's	28
50's	34

Southern high grade mule yarn:—

Cones.

10's	19½
12's	20
14's	20½
16's	21
18's	21½
20's and 22's	22-22½
24's	23

Southern frame yarn, lower grades:—

6's and 8's	18
10's	18

Eastern cones (high grade quality):—

10's	20
12's	20½

PAULSON, LINKROUM & CO.
Successors to BUCKINGHAM, PAULSON & CO.
Commission Merchants
COTTON YARNS of all Descriptions
83 Leonard St., NEW YORK
302 Chestnut St., Phila. 210 Munroe St., Chicago, Ill.
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
FOR ALL PURPOSES.
122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. SALKELD & BRO.,
With FRED'K VIETOR & ACHELIS,
YARNS.
66-72 LEONARD STREET, - NEW YORK.

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

MOELLER & LITTAUER,
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey-Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK

SPINNING MILLS:
NEW BEDFORD, FALL RIVER, TAUNTON.

DYE AND BLEACH WORKS:
FALL RIVER, TAUNTON.

NEW ENGLAND COTTON YARN CO.

KNITTING AND
WEAVING YARNS

EVERY DESCRIPTION AND FORM

Gray, Bleached, Dyed and Mercerized

600,000 MULE AND FRAME SPINDLES

C. MINOT WELD, President.
HENRY C. SIBLEY, Treasurer.

ARTHUR R. SHARP, General Manager.

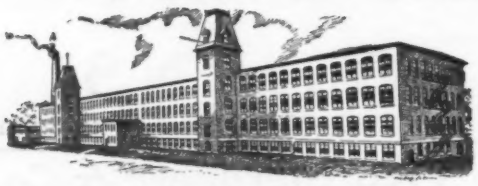
Executive Office:

141 Milk Street, Boston.

BRANCH OFFICES:
ALBANY, Broadway, cor. State St.
CHICAGO, cor. Clark and Adams St.
NEW YORK, 73 Worth St.
PHILADELPHIA, 213 Chestnut St.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.,

Formerly E. JENCKES MFG. CO.

Carded and Combed Cotton Yarns for Weavers and Knitters.
Double and Twist Yarns for Woolen Trade.

PAWTUCKET, R. I.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
WARPS

FITCHBURG, MASS.

Indian-Orchard-Company.
Cotton Warps and Yarns.
In Gray and all Colors, Single or Two or more Ply, and Cable Cord
Novelty Yarns.
in Various Patterns, Colors and Twists.
Carded and Colored Cotton.
For Mixing with wool, Machined or in Roving.
Indian Orchard Mass

14's	21
16's	21¾
18's	22¼
20's and 22's	22¾-23¼
Skein yarn (mostly Southern):—	
4's to 8's soft	18
10's to 12's	18½
14's to 20's	19-20
22's	20½
14/2	20
16/2	20½
20/2	22
30/2	25
40/2	20
16/3 slack	20
12/3 slack	19½
8/3 carpet	17½
8/3 slack	17½
9/4 slack	17½
Warps (Southern):—	
10's to 12's	19
14's	19½
16's	20
20's to 22's	20-20½
26's	21½
14/2	20
16/2	20½
20/2	22
24/2	23
30/2	25
40/2	29
Mixed colored yarns (mock twist, half colors):—	
6's to 10's	19-19½
12's to 14's	20-21
16's to 18's	21½-22

Mock Egyptian, 2c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

The spinners of Bradford yarn have secured orders during the past month, but weavers have not purchased without first having secured orders for cloth. Both spinner and weaver are moving cautiously, for although this is a worsted season, spinners have orders which will last not more than two months. The yarn ordered has been going to the weaver in good volume and in most mills is coming forward more promptly than can be handled,—which shows that the spinners are making the most of orders on hand. At the same time many spinners are refusing orders and in some instances are running on staple yarn without orders.

The demand from the men's wear weavers is for 1/2 blood XX quality and half XX and Australian. Much double and twist yarn is being used for cross dye and also mixes are being used for Oxford mix serges. Many of the weavers owning surplus yarn, especially 1/4 and 3/8 blood quality, are selling to other weavers whenever an opportunity offers. The demand is for 1/4 and 3/8 blood yarn

American Cotton Yarn Exchange
COMBED and CARDED
COTTON YARNS
From Northern and Southern Mills.
American, Egyptian, Peruvian and Sea Islands.
ARNOLD B. SANFORD, Pres. and Gen. Mgr.
OFFICES:
67 CHAUNCY STREET - - BOSTON

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.
Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines, For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps, Cones, Cops, Tubes
COTTON YARNS
426 and 428 Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers.
GASSED YARN SPECIALTIES

CELEBRATED BRAND PYRAMID LACINGS
For Underwear, Overshirts and Sweaters,
JOHN CATHCART & CO.,
115 Franklin Street, NEW YORK.

LACINGS FOR OVERSHIRTS and UNDERWEAR.
Tipped and Tasseled.
Hepner & Horwitz, 30 Howard St., N. Y.

F. C. BARTON
MANUFACTURER OF LILY BRAND NARROW FABRICS
RIBBONS, TAPES, BINDINGS & NON ELASTIC WEBBINGS
54 FRANKLIN STREET, NEW YORK

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—White or colors,
in skeins, on spools, cones, or shuttle bobbins.

Novelty Yarns—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making yarns only.

Genapped Yarns of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

DYERS OF YARN AND SLUBBING. BRISTOL, R. I.

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen,

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

RICHARD CAMPION,

SELLING AGENT FOR

Bristol Worsted Mills,

Highland Worsted Mills,

300 Chestnut Street,
PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPIA.

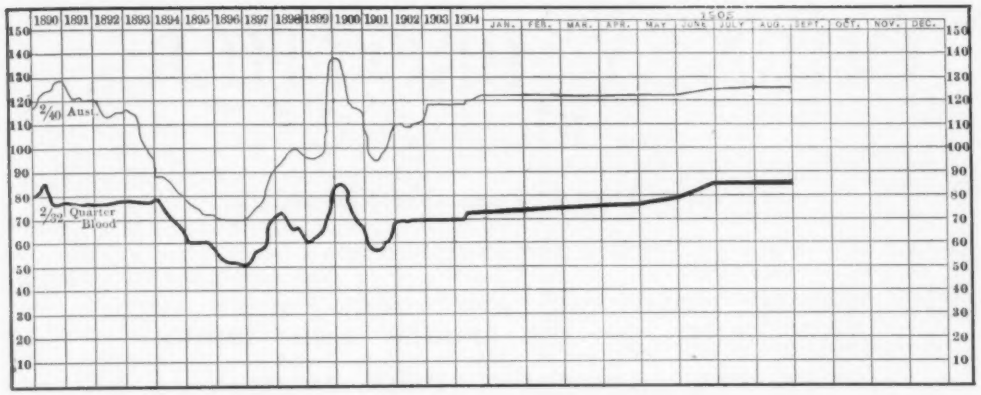


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

is falling off and spinners are certainly afraid to buy tops of this grade at concessions. The demand for this quality of yarn in crossbreds is falling off in Europe and all indications point to the use of finer yarn.

We note also that some very successful weavers (and we have one in mind, who is running day and night) are making their mercerized worsted cloth of worsted filling and for their warp are using a 1/80s combed Sea Island twisted with a woolen yarn. This shows that the use of worsted is dispensed with wherever possible. At the prices being asked for yarn it is no wonder that this should happen; 2/36s quarter blood yarn sold 18 months ago for 72 cts.; today the price is 95 cts., and all other yarns have advanced in proportion. Just here is a chance for a warning. If the present high prices for yarn continue much cloth will be imported, as cloth is at least up to the importing point on certain grades.

The bunting manufacturers are busy having secured many orders, but even these mills are getting orders largely for bunting with cotton warp. The dress goods manufacturers have been selling off much of their 2/36s ¼ blood yarn and some have taken orders for mercerized men's wear cloth. The spinners of French yarn continue busy running on filling yarn for the weavers of mercerized cloth—these mills have business which will last easily into December. The orders were taken in June and what will happen when the weavers wish to purchase further the manufacturers of the yarn do not know, as it is impossible to forecast the wool situation, which is the basis of the supply. The demand from the weavers has been largely ⅜ to ½ blood grade and runs in size from 1/14s to 1/24s. Many of the top makers supplying these mills are running overtime to get the tops out for prompt delivery, but while the machinery is busy on this fine work, all the coarse machinery is idle.

The regular business of the French spinners, such as hosiery and underwear, is in a draggy con-

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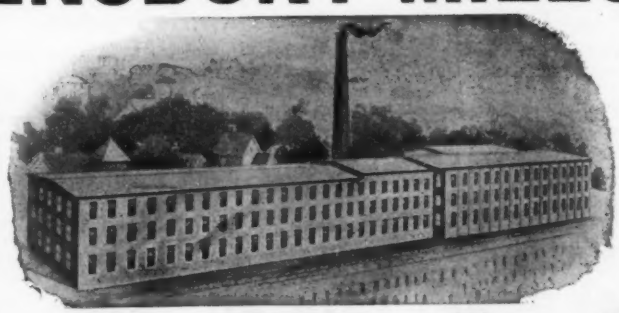
LUSTRE YARNS FOR SERGE LININGS

ALPACA YARNS



SPINNERS OF MOHAIR YARNS FOR ZIBELINES

DRESS GOODS YARNS KNITTING YARNS WORSTED YARNS

MOHAIR

CHENEY BROTHERS,

Silk Manufacturers,

SOUTH MANCHESTER, CONNECTICUT.

TRAMS, ORGANZINE AND SPUN SILKS IN THE HANK, OR ON SPOOLS AND CONES.

SILKS FOR ELECTRICAL USES, INSULATION AND SPECIAL PURPOSES MADE TO ORDER.

KNITTING SILKS, RIBBONS AND PIECE GOODS FOR TRIMMING KNIT GOODS.

Pure Dye and Fast Colors Warranted.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

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SAUQUOIT SILK MFG. CO.,

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ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

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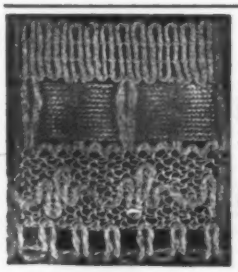

GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 18 to 32s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached, Bleached and Colors for Manufacturers' use.

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dition. Yarn prices have advanced and the hosiery and underwear manufacturers declare that they can pay no higher prices. What yarn is bought will be from hand to mouth, because they say that hosiery and underwear are sold at a set price. The present conditions may change matters after the buyers are convinced that an advance must be paid, notwithstanding the set price idea. Fortunately the French spinners having taken on the new line could not supply old customers if they wished to at these prices, so when the fall trade starts up and the underwear manufacturers secure orders the question of yarn supply will be a serious one. At present moment spinners have nothing of which they can complain. Prices firm.

2/40s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	95-97½
2/32s 1/4 Blood	84
2/20s 1/4 Blood	75-82

Woolen Yarn.

Spinners of woolen yarn are running, some more and some less. The men's wear weavers on the lower class of yarn are placing but few orders and many of the mills on the cheaper cloths are shutting down for lack of business. Some of the mills making the better class of cloth are having much woolen yarn spun to twist with cotton and are employing much outside machinery. The present worsted season on men's wear has necessitated a general shifting of customers, but the custom spinners are fairly well employed. The sale yarn spinners are not so fortunate and say that this is one of the hardest seasons they have had for many years.

The hosiery manufacturers are placing some orders for merino yarn and also for all wool yarn and more of this class of yarn will be used this season than for a long time past. This is particularly true of merino yarn. The value of this woolen and merino yarn has advanced to a great price as compared to that of one year ago, but many new wool substitutes have come on the market and may to some extent relieve the situation.

The present is one of between seasons with the knitters. In New York state, Cohoes and else-

What's the Use

of buying three or four times as much oil as is actually used for lubrication? For every drop of fluid oil which is **worn out** in reducing friction between bearing surfaces, at least three other drops either never reach the bearing in the first place, or else run through it into the goods and the floors.

The use of **NON-FLUID OILS** means free insurance against mill stains on goods, a substantial decrease in the oil bill, and — last but not least — no increase in the coal bill.

A postal will bring free testing samples by paid express.

NEW YORK & NEW JERSEY LUBRICANT CO.,
17 Church St., New York City.

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.

C. MOORE & CO.,
Manufacturers of
TWINES, THREADS AND YARNS,
Jacquard Harness Twines of all kind on hand and made to order.
S.W. Cor. Fifth and Market Sts., Phila.

JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
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Knitting and Weaving
YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
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YARNS Solis, Boston.
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SUMMER STREET.
ANDREW J. SOLIS, Jr. & CO.

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Cotton and Cotton Wastes

Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

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Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN CO., MANUFACTURERS OF

.. Shoddies ..

Of every description. Capacity 7,000,000 pounds per annum. Custom Carbonizing and Garnetting a Speciality.

New York Office. 140 DUANE STREET. **RIVERDALE, NORTHBRIDGE, MASS.**

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Established 1860—Incorporated 1893.

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COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Has stood the test of years in Textile Mills

WARREN'S PULLEY COVER.

It allows belts to run slack without slipping. Saves power, belts and bearings. Any careful man can apply it. Is very economical and durable.

Sufficient for 40 sq. ft., $5; 125 sq. ft., $12.

If your supply house does not sell it, order direct.

The Warren Co., Mfrs., 192 Orleans Street, Chicago, Ill.

where, the annual summer vacation is taking place. When the business starts in again the buyers of underwear will be forced to realize that prices have advanced and must be paid. Buyers have waited for lower prices, but many are beginning to test the market and when many orders are placed later manufacturers will find it difficult to get the stock and ship the underwear to the buyers promptly.

Knitters complain that but little money is being made and certainly stocks of yarn and material are very low. It is believed that October will bring forth much business for yarn as the high priced worsted is causing cloth buyers to look with favor on cloth made from woolen yarn. Then again there are buyers of eiderdown fabrics who have held off the market for six or eight months expecting the price of yarn would be lower. These buyers cannot keep out of the market much longer and will soon place orders in considerable amount. The coming heavy weight season will give spinners a chance at backing yarn and while there may be a lull among the spinners of woolen yarn it is only temporary. The greatest complaint is that the high prices are making it impossible for spinners to get a new dollar for an old one. The buyer pays advances with such bad grace that the spinner splits his own profit to less than a commission. The present is a time of great uncertainty. Carbonized Australian lamb's wool is the cheapest wool on the market. Prices range from 77 to 80 cts. per pound. Fine wools will be no lower for some time.

Rag and Shoddy Market.

The refusal of these markets to advance under the stimulus of high priced wool is ascribed to the unpopularity of the carded woolen finish. Worsteds have the call and shoddy is not adapted for worsted effects. Wool has apparently reached the limit of the consumer's purchasing power and to satisfy the demand for cloth showing worsted effects the looms have been put on cotton worsteds in which there is very little wool or shoddy.

There has been no decline in the rag and shoddy markets in spite of the unfavorable conditions in the goods trade. Business has been quiet but sellers have resolutely refused to make concessions in price. Evidently the collecting of rags has been regulated by the demand, for stocks are small in spite of the slack demand. The trade is now looking forward to the coming of the heavy weight season when the demand for shoddy is heaviest. Buyers of both rags and shoddy have confined their operations to spot business, neither being willing to discount the future in any measurable degree. Predictions have been freely made that a break in prices would occur before Sept. 1, but on that date there is nothing on which to base a prediction of lower prices. We quote as follows:

STANDARD QUALITY COMBED RAMIE TOPS and NOILS a Specialty. **RAMIE YARNS in All Numbers for All Purposes.**

Wool, Mohair, Camel Hair, Silk, and Ramie Tops and Noils.

FRANK A. TIERNEY,

Wool, Tops, Noils, Yarns.

Woolen, Worsted, Mohair, Ramie and Silk Knitting Yarns.

All Kinds of Yarn for Weaving Purposes. Special Fibres and Novelties for Woolen, Cotton and Silk Manufacturers.

Room 203, Wool Exchange Building, 260 West Broadway, New York.

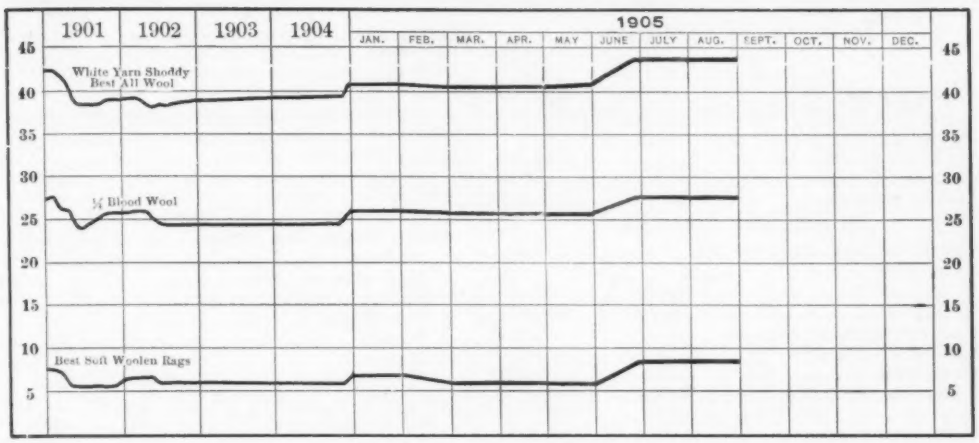

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

SHODDIES AND EXTRACTS.

White yarn, best all wool	44-47
White knit, all wool, best, fine	35-40
White knit, No. 2	30-35
Light yarn, extra fine	30-35
New pure indigo blue	28-30

Merino.

Fine light, all wool, No. 1	24-27
Medium light, all wool, No. 1	15-17
Medium light, all wool, No. 2	15-17
Fine black, all wool	25-27
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 1	18-20
Medium dark, all wool, No. 2	15-16
Red knit stock, strictly all wool	20-22
Red flannel, all wool	20-22
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	15-18

DELAINE EXTRACTS.

Light	17-18
Medium light	16-17

WOOLEN RAGS.

Fancy colors	20-26
Fine merchant tailors, all colors	8½-9½
Choice light colors	12-13
Browns	12-13
Blacks	8-8½
Fine blues, plain	9-10
Fine dark	9-10
Medium dark	6-7

Worsteds.

Blue	16-18
Black	20-22

Serges.

New black	16-18
New blue	15-17

Flannels.

New scarlet	19-20
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	9-10
Old white flannels	20-22
White flannels, No. 2	11-12
Old red flannels	12-13
Light blue flannels	7½-8½
Old blue flannels	6¼-7
Fine worsted, new black	21-22
New blue clip, best, fine	15-16
Old plaids	5-7½
White stockings	20-22
White hood stock	20-22
Clear hoods	9-10
Red stockings	12-13
Blue stockings	8½-9
Fancy stockings, No. 1	9½-11
Gray stockings	9½-10½
Black stockings	10½-11½
Knit stock comforters	7-8
Red knit	12-13
Light gray knit	9-10
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	16-17
Light, coarse	7½-8
Fine, dark	12-13
Coarse, dark	7-7½
Blue	11-12
Blue—seamed	13-14
Black—seamed	15-16
New black	18-20
Small	4-5
Bunting	7-10

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	7-8
Fine black, and blue, all wool	6-7
Fine dark, all wool	2½-4
Gig, fine, all wool	2-3
No. 1 black, all wool cut	6-10

COTTON WASTE.

No. 1 Spinners	10-10¼
No. 1 Machine	6¼-6½
No. 2 Machine	5-5½
Machine Cop	9-9½
No. 1 Cop	8¾-9
No. 1 Card	7½-8½
No. 2 Card	6-6½
No. 1 Oily Card	5½-6
No. 2 Oily Card	4-4½
Peeler Combing	10-10¼
Egyptian Combing	10-10¼
No. 1 Linters	5½-6
No. 2 Linters	4½-5
White Clips	4½-5
Colored Clips	1½-2¼

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.60-4.05
Citric, domestic	38-38½
Oxalic	5.00-5.15
Sulphuric, 60 deg., 100 lbs.	1.10-1.30
Muriatic, 18 deg.	1.50-1.60
Tartaric crystals	29-29½

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.35-2.40
Alum, lump	1.75-1.85
ground	1.85-1.95
powdered	3.00-3.25
Aqua ammonia, 16 deg.	3¼-4
Ammoniac, sal., gray	5¾-6
Borax, bbls.	7¾-8
Brimstone, crude, foreign ton	21.90-22.00
Copperas	52½-65
Cream tartar, crystals	23½-23¾
Fuller's earth, lump, 100 lbs.	80-85
powdered	80-85
Glauber's salt	45-50
Potash, chlorate, crystals	8¼-8¾
powdered	8⅜-8⅞
carbonate	4-4¼
Soda ash, carbonate, 48 per cent	1.20-1.30
high test	1.00-1.25
Soda, bicarbonate, English	
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	85-90
Sal. American	60-70
Sulphate, alumina	90-1¼
Vitriol, blue	5.20-5½

Dyestuffs.

Acetate of soda	4-4¼
Acid, picric, best crystals	22-28
tannic, commercial	35-37
Albumen, egg	46-65
blood	20-27
Alizarine, red	15½-16
Aniline oil	10-10¼
salt crystals	8⅝-8¾
Antimony salt, 65 per cent.	13-15
Bichloride of tin, 50 per cent.	10
45 per cent.	9½
Bichromate of potash, American	8½-8¾
Bichromate of soda	6½-6¾
Bisulphate of soda	1-1½
Cutch, mat	4½-6
boxes	5-8
Dextrine, imported potato	6½-7½
corn	2.45-2¾
Divi-divi ton	35.00-40.00
Flavine	23-40
Fustic, stick, ton	18-20
young root	31.00-35.00
Gambier	4½
Hypo. of soda, Am. bbls. cwt.	1.40-1.50
Indigo, Bengal, low grade	52½-55
medium	60-65
high grade	75-85
Kurpah's, medium to good	47½-60
Gautemala	35-70
Manila	43-45
Madras	42-45
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	15.00-19.00
roots	14.00-16.00
Madder, Dutch ..	7-10
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1¼-1½
Nutgalls, blue Aleppo	17-18
Persian berries	
Phosphate of soda	1.90-2¼
Prussiate of potash, yellow	13½-13¾
Quercitron, ton	18.00-20.00
Starch, corn, pearl, bbls.	2
corn, pearl, bags	1.85
potato	3½-4
rice	6½-7½
wheat	5-6
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	45.00-46.00
Sicily, No. 2, ton	42.00-43.00
Tapioca flour	2-3
Tin crystals	23½-25
Tumeric, Bengal	4½-4¾
Zinc dust	5¼-6

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So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

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May be applied at any stage of manufacturing. Write for Booklet.

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Since its introduction transmission by means of ropes has steadily grown in favor, and the qualities of efficiency and economy have won for it a place of high regard among mill owners and engineers.

There is hardly a textile mill in the country that does not offer some opportunity for the use of rope drives and we gladly place at their disposal the results of our long experience in this line.

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Our book on "Rope Driving" will be valuable to anyone at all interested in the subject. Write for it.

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The Agency for Selling the Well Known

Bach Knitting Machines

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Mr. Max Guenther,

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will take care of all our business.

We call the attention of **Sweaters, Gloves, Mittens, Jersey and Fancy Knit Goods Manufacturers** to the fact that **Mr. Guenther,** with his twenty-five years' experience in manufacturing all kinds of Knit Goods on every make of Knitting Machinery in this line, here and abroad, will be able to give you exactly the machine you want, or can suggest whatever is the proper machine for your particular line.

Trusting that all our old customers will favor **Mr. Guenther** with a call, when in need of additional machinery, and any new parties wanting the advice of an experienced Knit Goods man in starting up new plants, or increasing old ones, write for particulars, or call at our new

Show Room, 531 12th Avenue, Newark, N. J.,

where you can see the

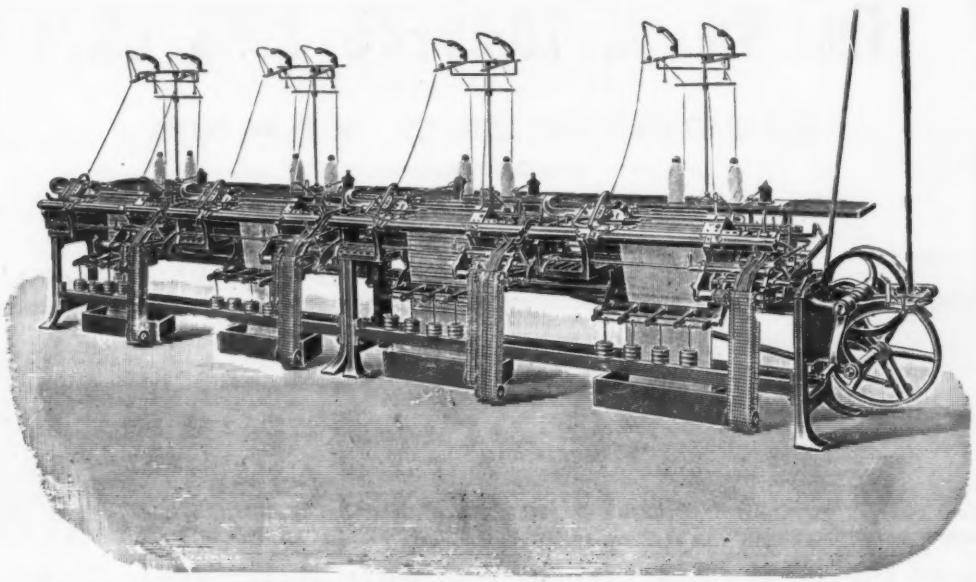
Celebrated Bach Knitting Machines

in operation; where you can see the advantages against other makes, with a full demonstration **why** ours are far above others in every respect.

WILH. BACH,

Manufacturer of Plain and Fancy Knitting Machines for Hand and Power.

Apolda, Germany, Sept. 1, 1905.



MODEL J. M. 4 SECTION POWER KNITTING MACHINE FOR SWEATERS, BLOUSES, ETC., PLAIN OR FANCY.

Each Section Working Independent From the Other, Automatic.

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Sole Agent for the United States and Canada for the well known

Bach Knitting Machine

Hand Machines for Plain and Fancy Goods
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SWEATERS, BLOUSES, GLOVES, MITTENS,
JERSEYS AND ANY FANCY KNIT GOODS.

Prices Lowest. All Parts and Needles on Hand.

Write for full particulars.

Manufacturers are invited to call and see machines in operation after October 1st.

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Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

MERCERIZERS AND DYERS.

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OF ALL CLASSES OF LINEN GOODS.
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Does the Best Bleaching at the Most Reasonable Rates?

TURKISH TOWELS, SKEIN YARN, TAPE, UNDERWEAR.

Send us a sample, we will show results and quote prices.

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DYERS, BLEACHERS AND **MERCERIZERS**

OF COTTON WARPS AND SKEIN YARNS.

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Oxford and Worth Sts., Frankford. Pa.

140 Chestnut Street, PHILADELPHIA.

We are Dyers of all kinds of YARNS Cotton AND Warps

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

T. BROPHY'S SONS, Jasper St., above Clearfield St., - PHILADELPHIA, PA.

WE DO BLEACHING and DYEING

ESPECIALLY FOR THE **KNIT GOODS TRADE**

YARNS BLEACHED AND DYED (delivered on cones)
CONE WINDING FOR THE TRADE.

Schuylkill Haven Bleach and Dye Works, SAMUEL ROWLAND, **Schuylkill Haven, Pa.**

N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

INGRAHAMVILLE DYE WORKS,

Dyers and Bleachers of Cotton Yarns in long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, Etc.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

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FIRTH & FOSTER CO.

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Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas. Panamas, Poplins, Serges and Cheviots. Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

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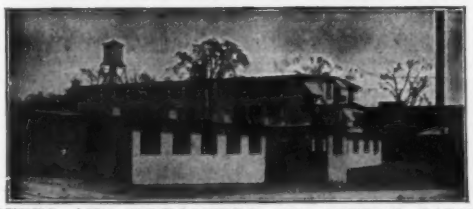

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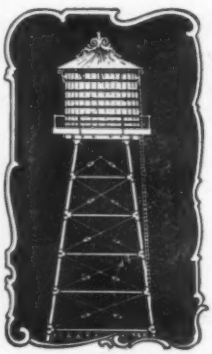

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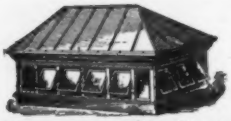

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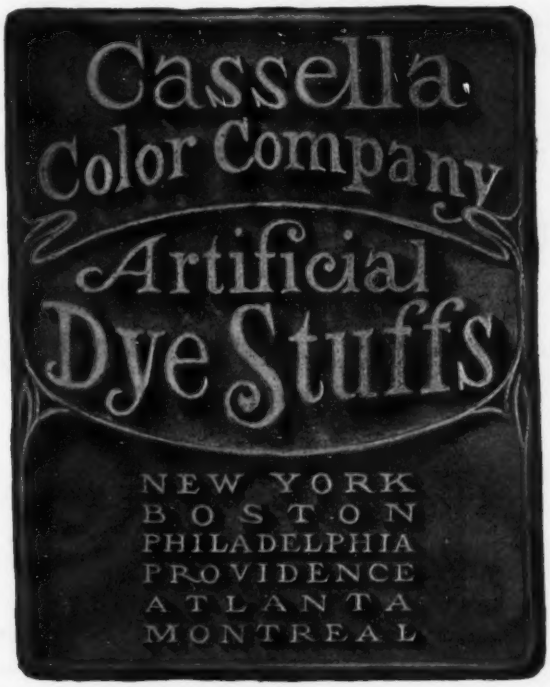
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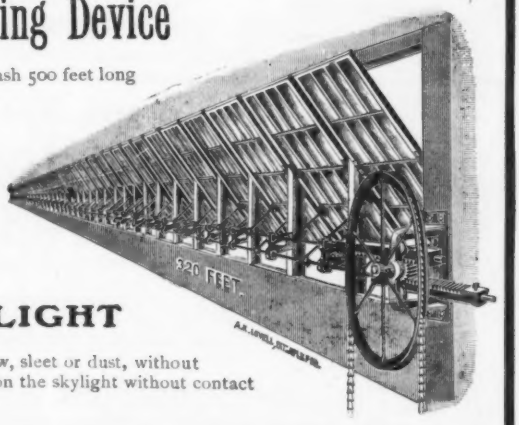

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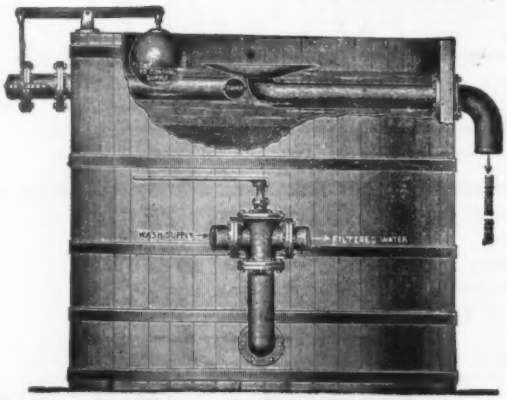

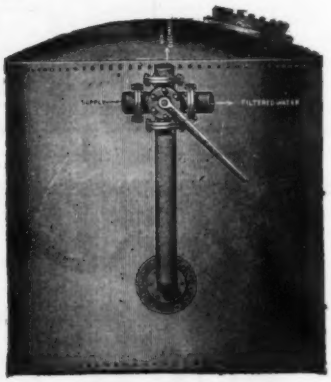

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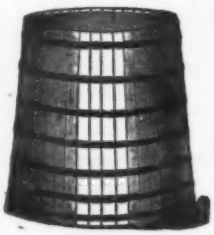

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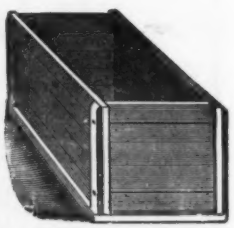

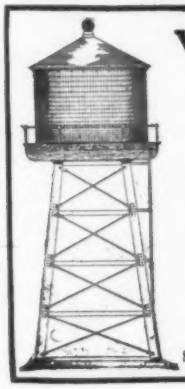

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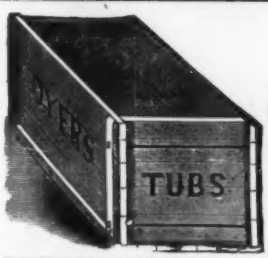

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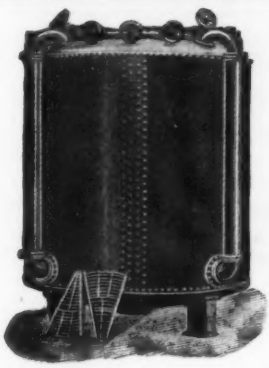

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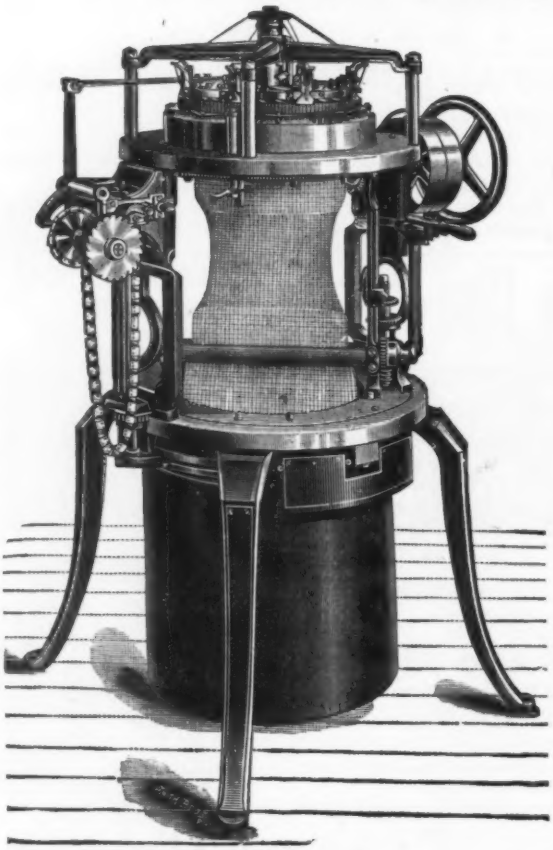

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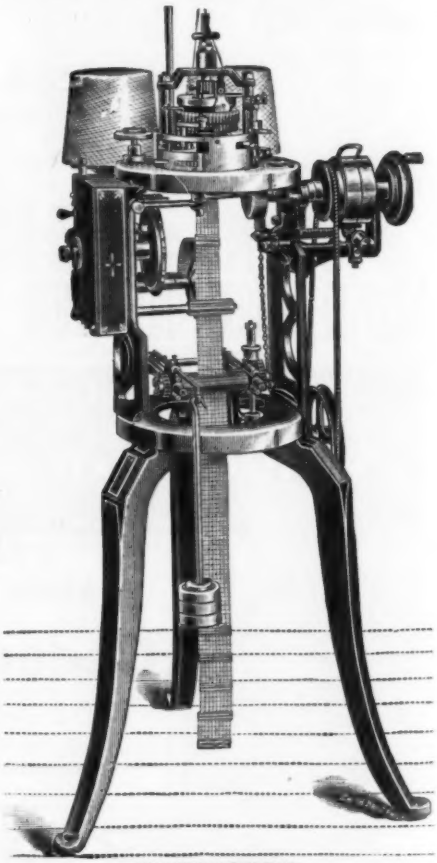

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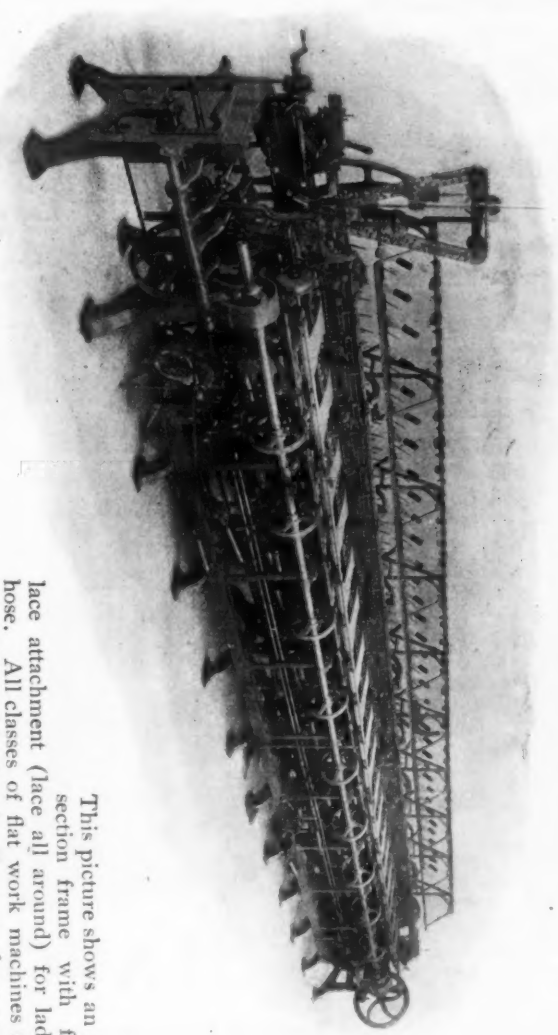

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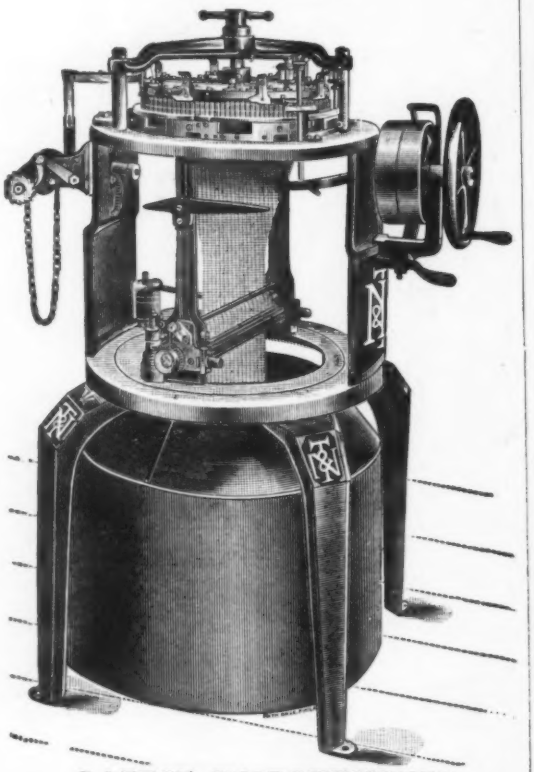

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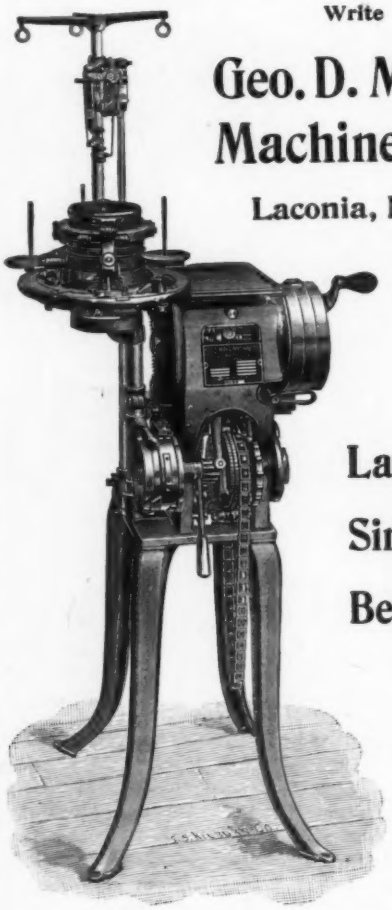

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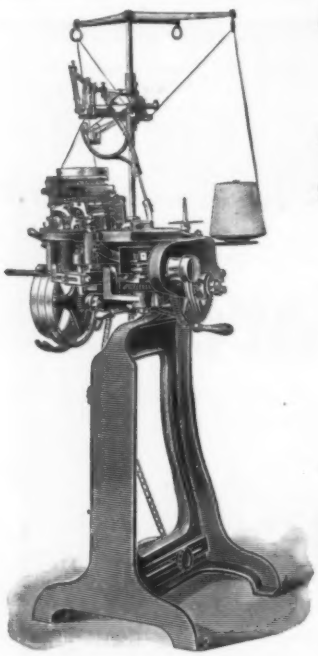

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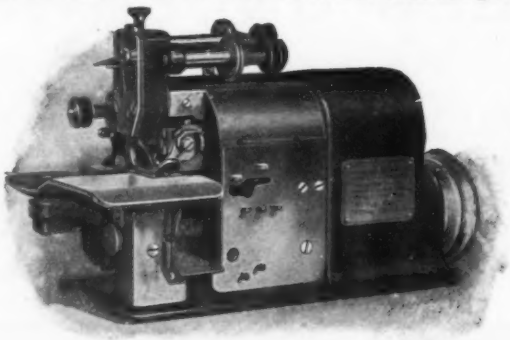

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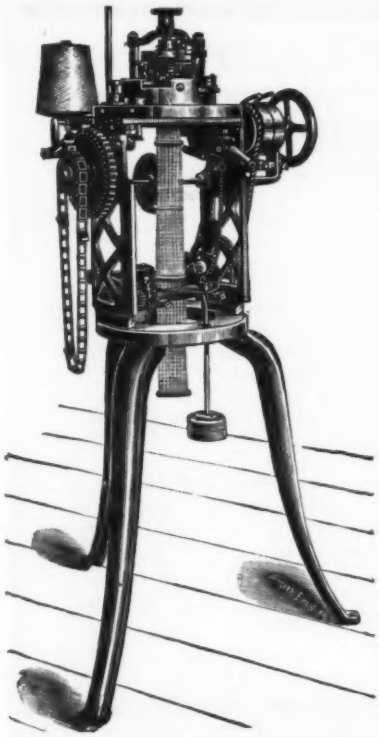

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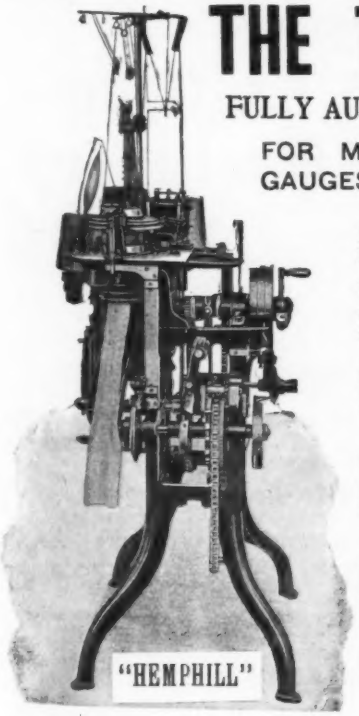
The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.

THE TWO LEADERS

FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY



One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

Write us for further particulars and prices.

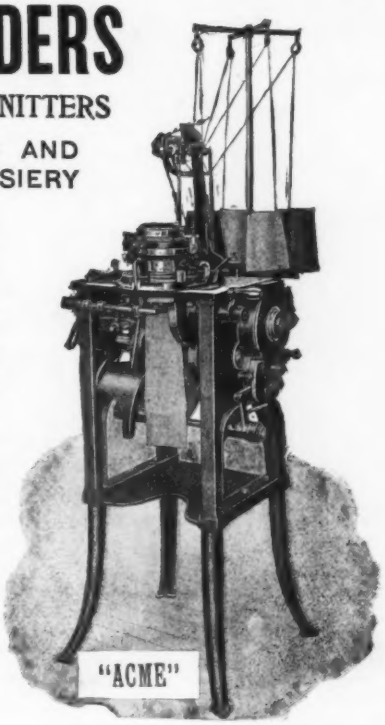
We also make all kinds of **LATCH NEEDLES.** Many leading manufacturers use our needles and say they are the best on the market. Send us a trial order.

MAYO

Knitting - Machine and Needle Co.,

FRANKLIN FALLS, N.H.

Philadelphia Office, Knickerbocker Bldg., Cor. 6th & Arch Sts.



JAMES TAYLOR,

835 Arch Street, - - - Philadelphia, Penn.

KNITTING MACHINERY

OF ALL KINDS. NEW AND SECOND HAND.

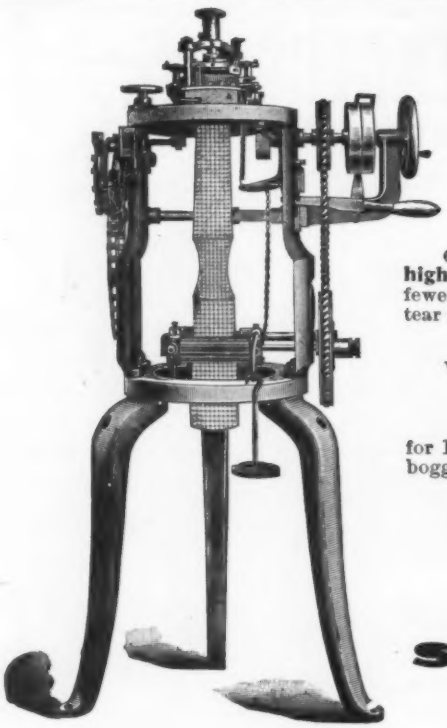
A RARE OPPORTUNITY TO BUY.

500 Payne bobbins.
10 Payne 48 spindle spoolers.
1 Bruce band folder and cutter.
50 Scott & Williams ¾ aut. knitters, 176 needles.
5 Jenckes Invincible 176 n. machines.
1 Back geared lathe, 6 ft. x 18 in. swing.
Lot hosiery stamps, boards, etc.
Brown & Sharp yarn reel and scales.
38 Beattie & Hepworth & Abel loopers.
6 Hosiery presses (lever).
4 Lamb and Grosser sweater machines.
200 Ribbed underwear machines, various sizes.
50 Brinton & Co. ¾ aut. knitters, sizes.
24 Standard B machines, 200 and 160 n.
50 Union Special machines, various styles.
1 Rotary fire pump.
100 feet woven rubber hose, 3 inches dia.
50 Mayo machines. Various sizes.
100 Brooks welters.
4 Fleecing machines. (Nappers.)
98 Brinton & Co. and other make hosiery ribbers.
1 40-Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
1 10 plate Crawford press, 32 x 48.
2 Lindsay & Hyde winders.
2 Grosser Jacquard machines for gloves.
3 Cyclone dryers
2 Typewriters.
5 Band folding and cutting machines.
4 30-inch ventilating fans.
1 Small Water Motor.
1 Small Steam Pump.
1 Small Belt Pump.
15 Rudolph Seaming Machines.

WRITE FOR COMPLETE LIST.

APPRAISEMENTS A SPECIALTY.

We are always in the market to buy good second-hand Knitting and Finishing Machinery.



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at very **high speed**, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

STAFFORD & HOLT,

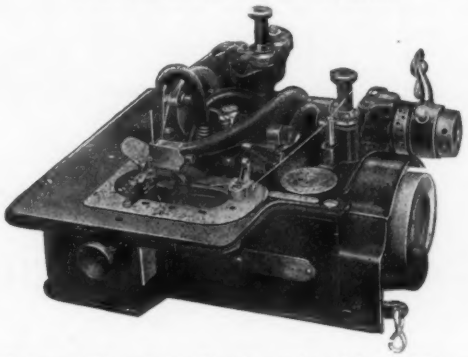
LITTLE FALLS, N. Y.

AN INSTRUMENT OF PRECISION!

"OVERLOCK" MACHINE

(Trade Mark) (Pat. April 5, 1892)

Patent twice upheld by U. S. Court of Appeals



Trade Mark

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

Business Established in 1859.

For TRIMMING, SEAMING (or Hemming or Overedging) and COVERING Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION** at 3000 Stitches per Minute.

WILLCOX & GIBBS SEWING MACHINE CO.,

General Offices: 658 BROADWAY, cor. BOND STREET,

NEW YORK, N. Y.

LONDON PARIS MILAN DRESDEN

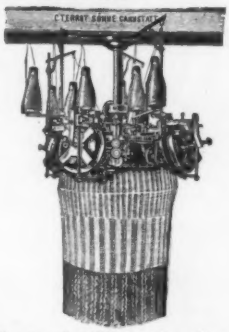
THE GROSSER KNITTING MACHINE CO.

WOOL EXCHANGE
Rooms 400-421

MAX NYDEGGER

260 W. Broadway
NEW YORK

SPECIAL MACHINES
FOR ANY ARTICLE THAT IS KNIT



GROSSER Flat Knitting Machines

For HAND power or **Fully Automatic Power Machines.** Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand.

Power machines to be seen in operation.

COTTON PATENT HOSIERY MACHINES

Built by **H. ALBAN LUDWIG, Chemnitz,** for automatic production of **Full Fashioned Hosiery, Fine Half Hose, Ladies' Lace Hose, Fine Underwear;** high Speed, large production. All gauges and any number of sections, from 2 to 24.

FRENCH FRAMES

C. TERROT SÖHNE, Cannstatt, Würt, famous builders of the best Circular Frame for **Finest Underwear, Fleece Linings, Gloves, Special à-jour** (open work) **Fabrics, etc.**

RASHEL MACHINES

For Fancy Goods in largest variety, **Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc.,** in silk, wool, cotton.

SPOOLERS, Paraffiners, Finishing Machines, for the knitting business.

SPECIAL OVERSEAMERS, "Julius Kohler"

Indispensable for Full Fashioned Articles, Sweaters, Hosiery, Gloves, Sporting Goods. **Loopers,** self-cutting and cleaning.

Largest Stock in NEEDLES

For Knitting Machines. Best IMPORTED quality. All parts, accessories, etc., delivered immediately from stock.

Samples, Special Offers, Prices, etc., upon application.

EXCELSIOR KNITTING MACHINE MFG. CO.

BUILDERS OF

Full Automatic Knitters

WITH OR WITHOUT

Transferring Device

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

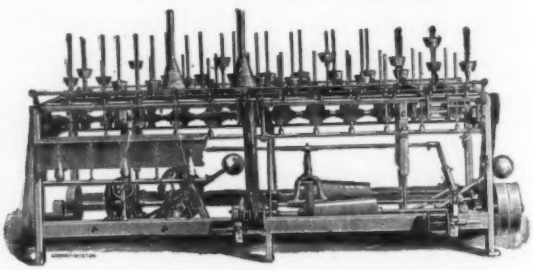
MEADOW AND WASHINGTON STREETS ALLENTOWN, PA.

CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

RIBBED UNDERWEAR

Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



ALSO BUILDERS OF THE WELL-KNOWN

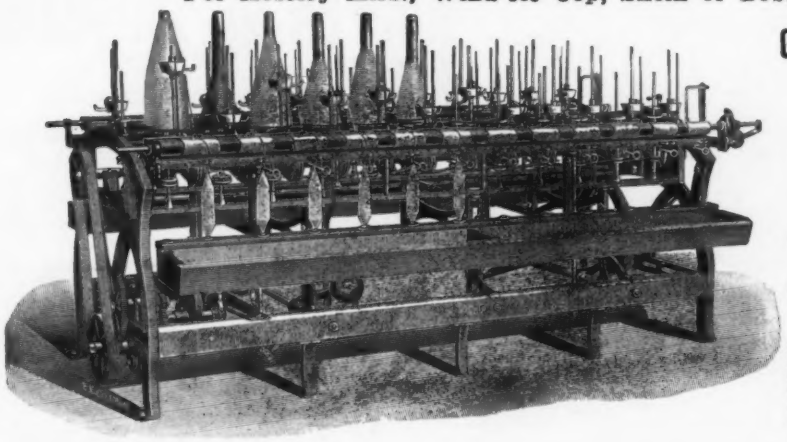
ABEL WINDERS, SEAMERS and LOOPERS.

LEIGHTON MACHINE CO., - Manchester, N. H.

GEO. W. PAYNE, Prest. J. MILTON PAYNE, Treas. CLINTON F. PAYNE, Sec'y.

OVER 1,650 PAYNE WINDERS IN USE

For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1902.]

Builders of the

Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers, for doubling 2, 3, or more ends into one,

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

OFFICE, 102 BROAD STREET
Pawtucket, R. I.

WILLIAM C. BULL, BENNINGTON, VERMONT.

For Ladies', Gents', and Children's Goods.

LATEST STYLES.

BEST WORKMANSHIP.

MAKER OF

Drying Form Boards

OF EVERY VARIETY.

WORKS: CHEMNITZ, SAXONY Established 1851

G. HILSCHER

FULL-FASHIONED HOSIERY AND UNDERWEAR MACHINE BUILDER

SOLE AGENT FOR UNITED STATES AND CANADA

EDWARD W. KOCH, 319 Bourse Building, Philadelphia, Pa.

"Awarded Gold Medal at World's Fair, Paris, 1900,

for highest improvement in the mechanism of manufacturing full-fashioned hosiery, solidity and perfect workmanship in construction and the superiority of fabric produced."

SPECIALTIES:

COTTON-HILSCHER HIGH SPEED SYSTEM, 65 courses per minute.

COTTON SYSTEM, for horizontal stripes up to 6 Colors, Scotch plaids and vertical stripes, lace through the narrowing, split, etc., etc.

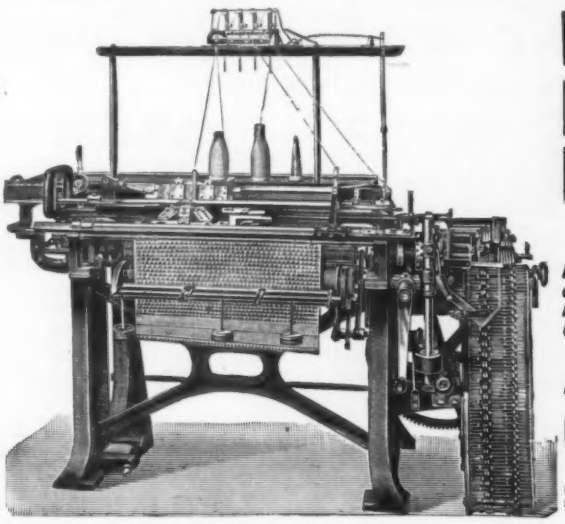
COTTON SYSTEM, wedge heel; this machine manufactures entire full fashioned ladies' hose or half hose and dispenses with the foot machine.

COTTON SYSTEM, newest construction. The new machine knits the entire hose or half hose complete down to the toe, it makes French heels and French feet.

RIB MACHINES: Cotton system, with and without narrowing.

RIB MACHINES: Hilscher system, high construction.

Machines can be seen in operation at above address.



Full Automatic NOPPEN & JACQUARD MACHINE

For High-Grade Sweaters, Jerseys, Etc. in latest plain and colored patterns.

Most durable, simplest construction! Easy to operate and adjust! Recognized as the Best in the market. One operator attends to 3 of these machines! Only reliable machine for above articles

HIGH SPEED! LARGE PRODUCTION! IN USE EVERYWHERE!

Ask for samples and full particulars. State gauge and size you need.

CLAES & FLENTJE Mühlhausen, Thür, GERMANY.

Representatives: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N.Y., where all kinds of hand and power machines can be seen working.

LEWIS JONES,

60½ and Media Streets, . . . PHILADELPHIA.

GAS ENGINES for city or country
BRUSHING MACHINERY
KNITTING MACHINERY

EFFICIENT
DURABLE
LOW IN PRICE

CRANE MFG. CO. Lakeport, N. H.

Spring Needle Circular

KNITTING MACHINE.

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

CRANE MFG. CO.

SUCCESSORS TO

PEPPER MACHINE WORKS

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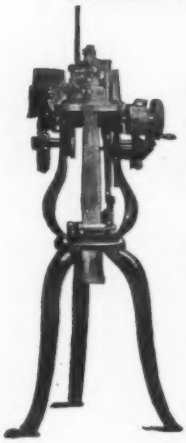
Manufacturers of



Knitting Machinery,

INCLUDING

Pepper's Flat Ribbed Cuff Machines,

Automatic Welt and Loose Course Machines for Stock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Short Cuffs, Sock Tops, Hose Legs, Wristers, etc.

Golf and Bicycle Stocking Machines,

ALL KINDS OF

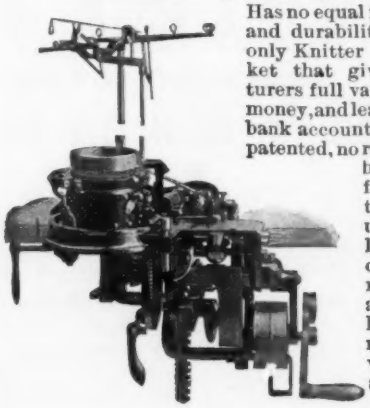
CIRCULAR RIBBED MACHINES

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

Correspondence Solicited.

The New Improved

Boss 15/16 Automatic KNITTER



Has no equal for simplicity and durability. It is the only Knitter on the market that gives manufacturers full value for their money, and leaves a swelled bank account. It is fully patented, no royalty to pay; built in sizes from 2½" up to 6"; from 42 up to 220 needles in 3¾" machine. Knits men's, ladies' and children's hose, plain or ribbed. Runs with one single belt. Automatic tension in heel and toe. Send for prices and particulars to

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

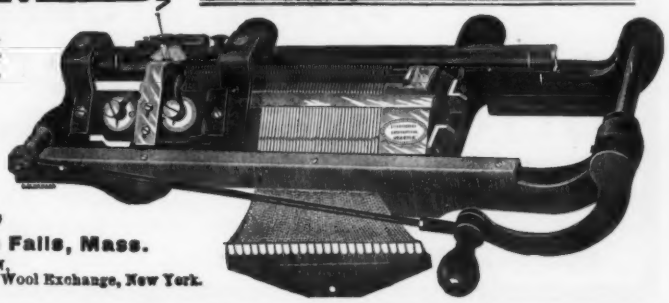
HARDENED STEEL CYLINDERS A SPECIALTY.

The LAMB, LEADER OF KNITTERS.

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

CIRCULAR MACHINES,
RIB TOP and
SEAMING MACHINES.



LAMB KNITTING MACHINE COMPANY,

P. O. Box 5888, Chicopee Falls, Mass.

J. E. WOODHEAD, 180 23d St., Chicago.
L. D. SANBORN, Room 405 Wool Exchange, New York.

High Speed and Most Durable Mechanism are the Essential Elements of Machines to Produce Sewed Articles. We have these Elements in the

New Union Special Single "Interlock" Machine

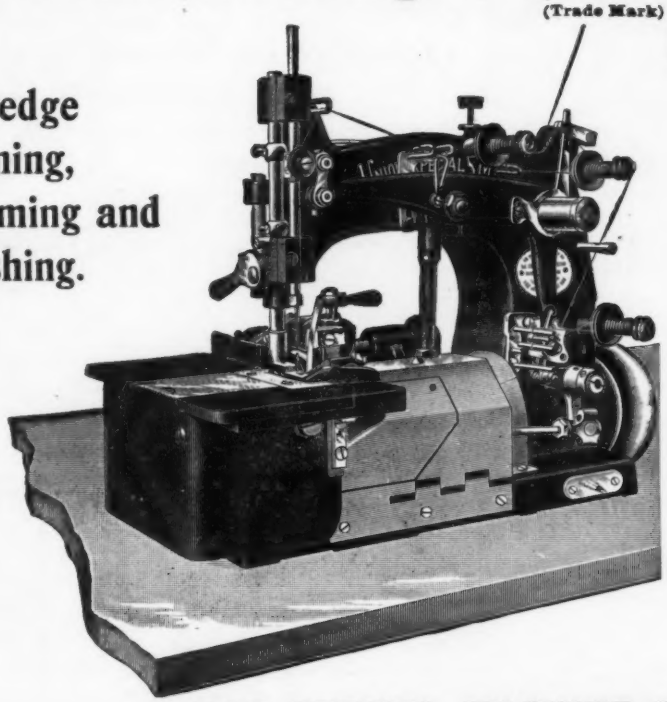
(Trade Mark)

For Overedge Seaming, Hemming and Finishing.

High Speed Class 15400.

Two or Three Thread Stitch.

Simplicity.



Durability.

UNION SPECIAL MACHINE CO.

73 E. Kinzie Street, Chicago.
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96 South Street, Boston.
1230 Olive Street, St. Louis.
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PAXTON & O'NEILL'S

3-4 AUTOMATIC KNITTER

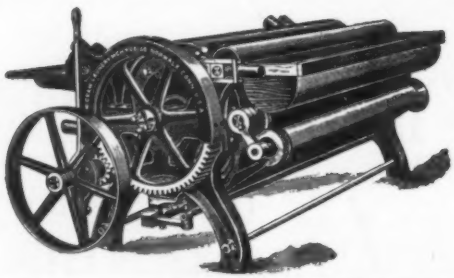
FOR ALL KINDS AND GUAGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers. Range on Half Hose, from the coarsest to 260 needle.

Exclusive rights to BROWN'S ATTACHMENTS FOR LACE EFFECT.

Cylinders and Dials for all size Machines. **127 Bread Street, Phila.**

AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,
SOUTH NORWALK, CONN.

HEPWORTH & CO.'S

Patent Single-Stitch

LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher Street,
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Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

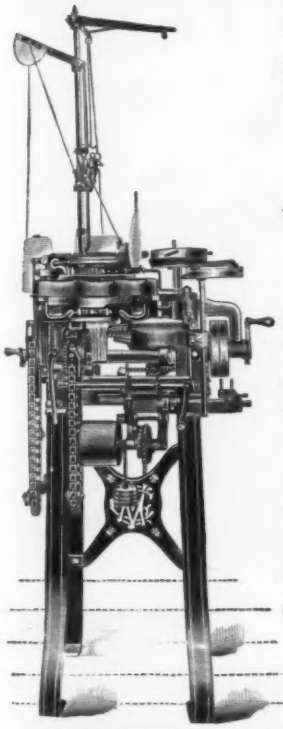
JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

Hosiery Boards.

We Know How

TO BUILD HOSIERY MACHINERY

That's Why There Are More Standards



in use than any other make.

Have you seen the new Standard F?

It will produce from 30% to 50% more goods than any other machine on the market.

Hosiery manufacturers are invited to inspect it in our show rooms.

ARE YOU INTERESTED?

STANDARD MACHINE CO.,
508 Ludlow Street,
Philadelphia.

KNIT FABRICS CUT TO LENGTH.

Our Knit Fabric Cutter

will cut from the roll, knit fabric into any length from 10" to 40" at the rate of 100 pieces a minute. The lengths are accurate, the waste is a minimum, the labor unskilled.

We also make a Slitter

for cutting these goods into narrow strips and re-winding same into rolls.

SAMUEL M. LANGSTON,

Manufacturer of Paper Box Machinery.

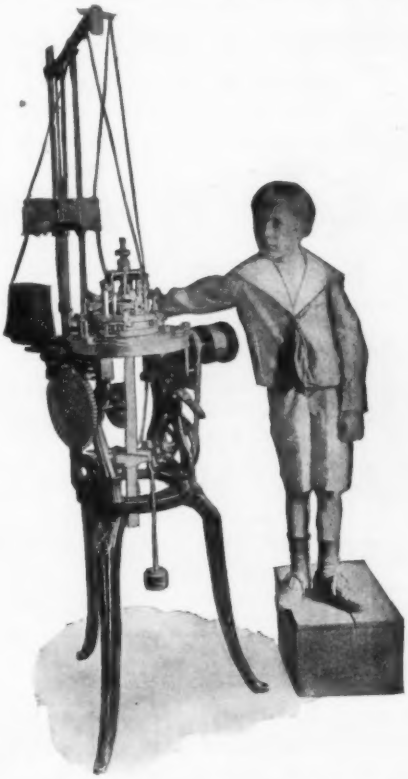
Ninth above Market Sts., Camden, N. J.

A FAIR PROPOSITION

If wanting to purchase Ribbers, you can try a

RUTH RIBBER and STOP MOTION

before buying to satisfy yourself that they are all right. Our STOP MOTION is a decided improvement over all others. No cutting of yarn, easy to thread. Stops from any imperfection in yarn. The movement of one lever releases brake and corrects yarn guide, when stop is caused by knot you have but one hook to thread. Very positive in its action.



Our RIBBER is high speed, durable, simple and easy to operate, with largest production; single or double feed, plain or fancy stitch for half hose and misses goods. Large loose-course, good round welt, double knee, sleeves or cuffs. Knits wool or cotton yarn, fine or course guage. Hardened cylinders and dials for any make of machine. Best Workmanship. All products guaranteed. Can attach STOP MOTION to any style machine.

Write to-day for price lists.

RUTH MACHINE CO., York, Pa.

Address Box "N." G. W. Ruth, Manager.

Do you wish to make knit goods as perfect as the French or German, and as rapidly as the American?

Do you want to plait?

Do you want to knit worsted or silk?

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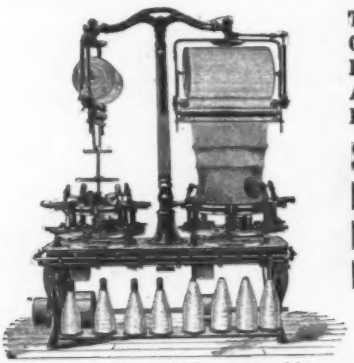
TOMPKINS BROS. CO.,

TROY, N. Y., U. S. A.



THE GREATEST PRODUCING AND MOST PERFECT

SPRING NEEDLE KNITTING MACHINE

IN THE WORLD

Manufactured by

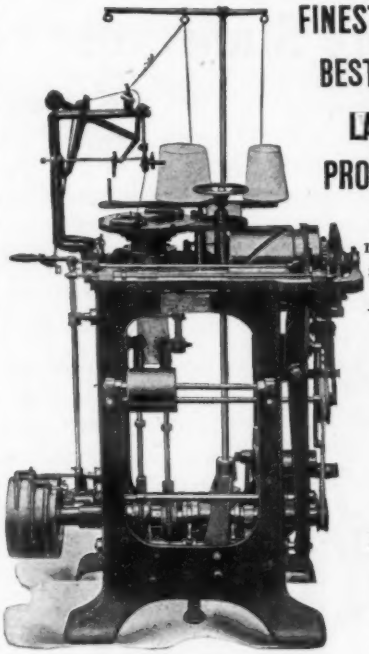
ROBERT W. CORMLY & CO.,

TROY, N. Y.

Thirty-five years' practical experience.

"NATIONAL"

Stands for



FINEST GAUGES

BEST FABRIC

LARGEST PRODUCT ON

Greatest Variety of Laces and Novelties.

All automatic.

Lowest Cost for Operating

Also

Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

728 Cherry Street, PHILADELPHIA, PA.

Julius Kayser, Pres. Simon Banner, Treas.

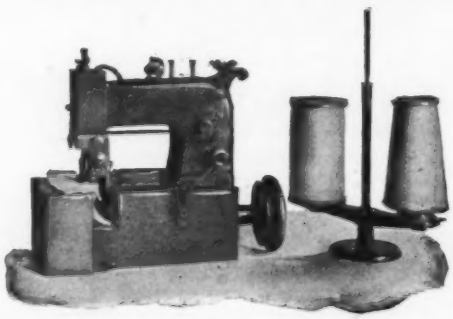
American Overedging and Seaming Machine Co.

Manufacturers of

Overedging

AND

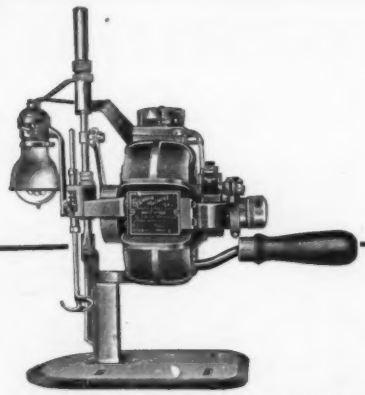
Seaming Machines



For All Kinds of

Cut and Full Fashioned Underwear and Sweaters

FACTORY, 543 EAST 116th STREET - - - - - - - NEW YORK CITY



Stealing the March

on competition is one of the secrets of success. If you're cutting your productions by hand, or by any of the old style methods—you can steal the march on your present competitors by changing and using an EASTMAN ELECTRIC CLOTH CUTTING MACHINE.

The Eastman Machine Company,
41 and 43 East Eagle St., Buffalo, N. Y.

OFFICES:
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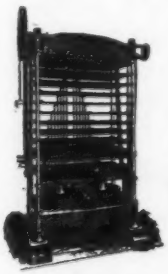


For Knit or Woolen Goods.

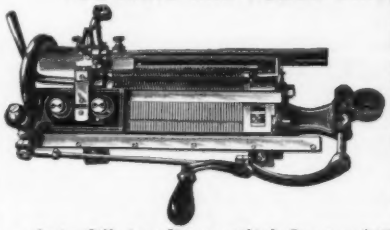
The most reliable machine of the kind on the market.

PRESS PAPERS and FENDERS.

SPENCE & RIDEOUT,
Successors to
J. J. CRAWFORD & SON,
NASHUA, N. H.
Established 1868.

Best Knitting Machines

IMPROVED CONSTRUCTION
FOR HAND AND POWER DRIVING.



High Speed, Excellent Workmanship.

Auto. Rib-top, Fancy-stitch Jacquard Machines.

Everywhere in work. **80,000** Machines sold.

CLAES & FLENTJE,
Mühlhausen, Thür, Germany.

Agents for the East: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y.
Agents for the West: Logan Knitting Factory, Logan, Utah.

DAVENPORT PEARL BUTTON CO.

Davenport, Iowa.
Manufacturers of
PEARL BUTTONS.
New York Office, - - - - - 377 Broadway

BUTTONS

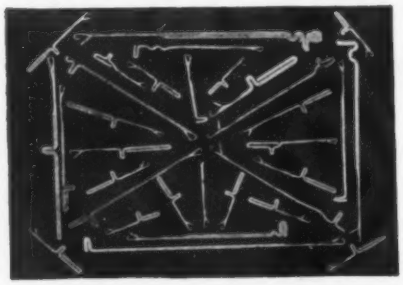
ALL KINDS OF BUTTONS
Fine Specialties for Fancy Knitting Trade.

WRITE US FOR UP TO DATE SAMPLES.

INTERNATIONAL BUTTON CO., Rochester, N. Y.
NEW YORK OFFICE, 826-828 BROADWAY.

TRY OUR "SUPERIOR" OR SUNKEN RIVET-HEAD NEEDLES

They will save you money.



Dodge Needle Co., Manchester, N. H.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

EXCELSIOR NEEDLES.
The best Hosiery Needles in the market.
Manufactured by
WARDWELL NEEDLE CO., Lakeport, N. H.

W.M. BREEDON'S SON,
MANUFACTURERS OF
Spring Knitting Needles
AND BURR BLADES OF ALL KINDS.
AMSTERDAM, - N. Y.

ORION TREAT,
MANUFACTURER OF
Screw Riveted Balmoral and Double Rib
NEEDLES
(Patented May 6, 1890.)
All Work Guaranteed. MANCHESTER GREEN, CONN.

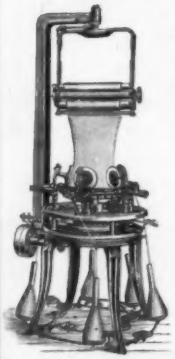
L. T. IVES CO.
Manufacturers of all kinds of
SPRING KNITTING NEEDLES
NEW BRUNSWICK, N. J.

Standard Latch Needles
MANUFACTURED BY
EXCELSIOR NEEDLE CO.,
TORRINGTON, CONN.
The Largest Manufacturers of Machine Needles in the World.

STANDARD
TRADE MARK.

Longer Wear. Better Work.
Less Mending. Fewer Seconds.
Have you tried our
Patent Milled Rivet.
Agents
C. B. Barker & Co., Ltd., 42 W. 15th St., New York.
Manufacturers' Supplies Co., 418 Arch St., Phila.
C. Shawl, 33 2d St., San Francisco, Cal.
J. C. Strittmatter, 2a Calle de San Francisco No. 9, City of Mexico, Mexico.

CHARLES COOPER,
BENNINGTON, VERMONT,
MANUFACTURER OF
Knitting Machinery



Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Tri:k Cylinder, **Spring Needle Cylinder Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders.

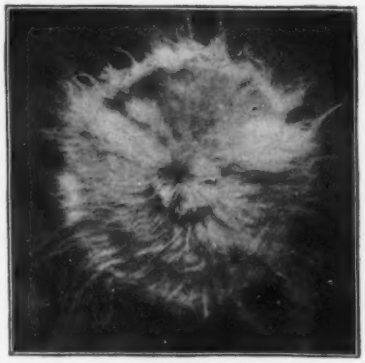
Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.

COLLARETTE ATTACHMENT

European Representatives,
MOSES MELLOR & SONS, Ltd.,
Nottingham, England.

Representatives:
C. J. SIBBALD, 757 River St., Troy, N. Y.
G. H. ROGERS, 509 Clinton St., Hudson, N. Y.

Tam O'Shanter Decision.



Preliminary Injunction

Was granted us on August 22nd, 1905, by the Hon. J. B. McPherson, United States Circuit Court at Philadelphia against S. Cohen & Co. (Girard Knitting Mills) restraining them from manufacturing tams under our patent No. 669,011, dated Feb. 26th, 1901. The claims of our patent for making brushed, knit tams are broad and have been sustained by the Highest Court of Appeal.

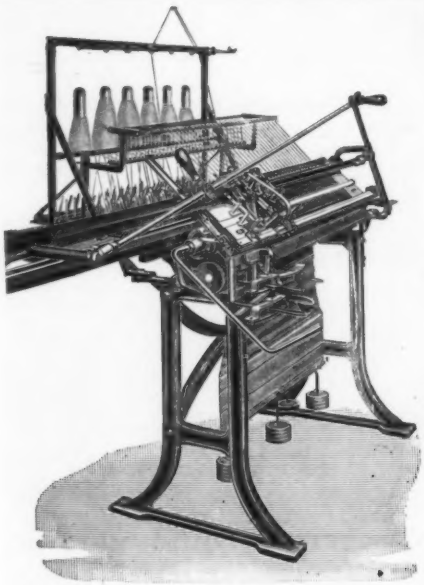
All persons are warned against the manufacture of these goods by methods which infringe the claims of our patent under penalty of immediate legal proceedings.

Quaker City Knitting Co.,
Philadelphia.

Manufacturers' Supplies Co.
418 ARCH STREET, PHILA.
Needles and Supplies for Knitting Mills.
Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

PAGE NEEDLE CO.,
MANUFACTURERS OF
LATCH NEEDLES
of all kinds. Warranted in every respect.
CHICOPEE FALLS, MASS.
Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

The Continental Latch Needle Company.
Manufacturers of the BEST GERMAN NEEDLE on the Market.
RIVETS GUARANTEED. Will send samples on application. CORRESPONDENCE SOLICITED.
120-122 LIBERTY STREET, - - - - - - - - - NEW YORK.



Walter & Co., Limited.

Mühlhausen i/Thür, Germany.

SPECIAL MANUFACTURERS
— OF —

KNITTING AND WINDING MACHINES

for hand and power driving, of best quality and perfect construction.

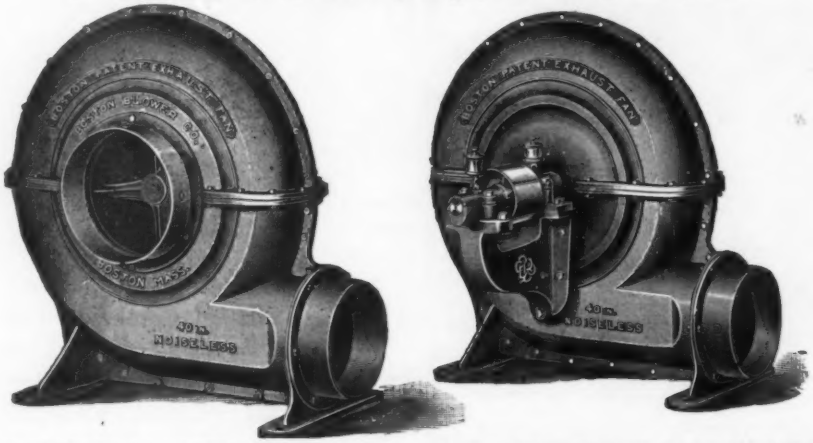
SPECIALTY: JACQUARD MACHINES

for hand and power driving for manufacturing of sweaters and every possible fancy article of that nature.

PRICE LISTS AND SAMPLE ON APPLICATION.

Boston Wool Exhausters, with Removable Tops.

As used in Connection with Pneumatic Conveyor System for Handling Wool, Cotton, Rags, Excelsior, Jute, etc.

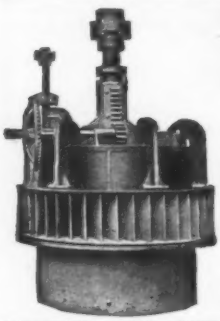


Inlet Side of Right-hand Wool Exhauster. **Pulley Side of Left-hand Wool Exhauster.**

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

This latter feature is especially desirable when handling wet or greasy materials or in handling anything, in fact, which would leave a deposit on the inside of fan, as the entire top may readily be removed for inspection or cleaning without disconnecting either pipe or belt connections.

BOSTON BLOWER CO., Main Office and Works: **Business and Glenwood Sts., HYDE PARK, MASS.**



Risdon-Alcott Turbine Co.

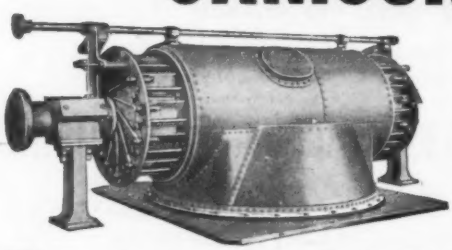
MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE

On Horizontal or Vertical Shafts.

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.

SAMSON TURBINE

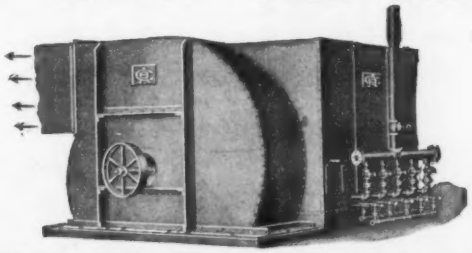


AN EVEN and REGULAR SPEED under all CHANGES of LOAD is always desirable. This condition combined with a QUICK SPEED and HIGH EFFICIENCY makes a combination hard to beat. The SAMSON maintains all these conditions under the most severe tests.

Write Department A-5 for Catalogue.

The James Leffel & Co., **SPRINGFIELD, OHIO, U. S. A.**

THE "A B C" FAN SYSTEM



The Ideal Method of Heating and Ventilating Textile Mills.

Thos. F. Parker, President The Monaghan Mills, Greenville, S. C., writes:

"We heat our mill, which is a four story building 450 ft. long by 130 ft. in width, with your hot air heating system. The equipment furnished by you has proved satisfactory in material and workmanship. We have had no trouble with your plant and consider it well adapted for heating of mills and other large buildings."

Its none too early to get into shape for winter. May we have your problem?

AMERICAN BLOWER CO., Detroit Mich., New York, Chicago, Atlanta, London.

CHARLES H. SCHNITZLER,
Patentee and Sole Manufacturer of
THE PNEUMATIC CONVEYOR

For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.

SATISFACTION GUARANTEED. Patented Oct. 15, 1889.

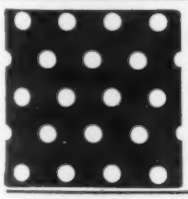
215 NORTH SECOND ST., - PHILADELPHIA, PA.

Water Wheel Governors
For TEXTILE MILLS

We Guarantee Satisfaction.

Replogle Governor Works

Write for Catalogue T. AKRON, OHIO.

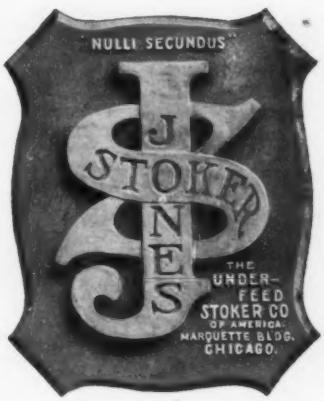


A. J. BECKLEY
PERFORATED COPPER

For Wool Scouring, Renser Boxes, Dyeing of Raw Cotton, Duster Screens, Picker Screens.

Perforated Screens of all kinds.

Factory and Office:
GARWOOD, NEW JERSEY.



PAIR McCORMICK TURBINES

4,000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.

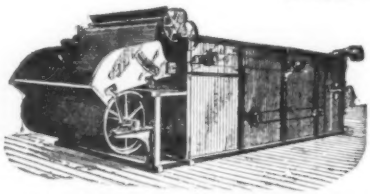
Write for Catalogue if contemplating purchase of turbines.

S. MORGAN SMITH CO.
YORK, PA.
Boston Office, 176 Federal Street.

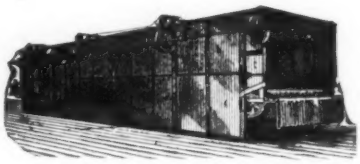
SEP 15 1905

"CYCLONE" DRYERS

For Cotton Stock, Wool Stock, Rags, Yarn, Cloth, Underwear, Stockings, etc.



Automatic Cotton or Wool Stock Dryer.



Automatic Yarn Dryer.

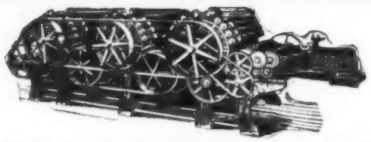
Steel Bladed Ventilating Fans.

Complete Carbonizing Outfits for Wool, Rags or Cloth.

IRON BOWL YARN SCOURING MACHINES.

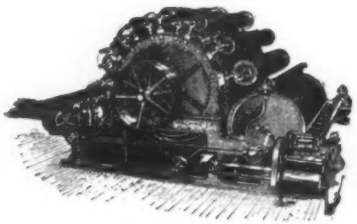
THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Streets, PHILADELPHIA, PA., U. S. A.

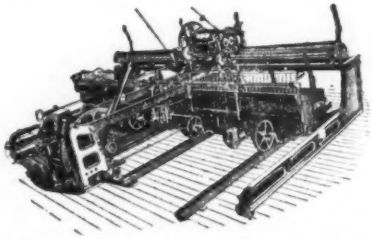


CARNETT MACHINES AND PICKERS

For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



WOOLEN MILL MACHINERY



Including Rag, Wool and Burr Pickers, Wool, Worsted and Shoddy Cards, Mules, Yarn Twisters, Warpers, Dressers, Spoolers, Etc.

Complete Equipment for Manufacturing Cotton Batting for All Purposes.

Special Carding and Spinning Machinery for manufacturing Yarn from such low grade stock as Mill Sweepings, Linters, Etc.

We reclothe or furnish new Metallic Toothed Cylinders and Rolls and relagg or furnish new Cylinders for any make of Rag Picker.

SMITH & FURBUSH MACHINE CO., Hancock and Somerset Streets, **PHILADELPHIA, PA., U. S. A.**

Get the October Delineator

Write to this office for a copy if your newsdealer is sold out, but do not, on any account, neglect the opportunity to examine

The First Regular Magazine Advertisements Ever Printed in TWO COLORS

Color work in magazine advertising has, up to the present time, involved the special printing of a few pages at a heavy additional cost, or the preparation of an "insert" by the advertiser, to be pasted in the advertising section. THE DELINEATOR *is now prepared to accept advertising for any portion of its advertising pages to be printed in two colors.* The cost to the advertiser is a very moderate advance over the ordinary advertising rate. The color ads in the October DELINEATOR represent one of the most radical improvements that have been made in modern advertising. It is an evolution made possible by The Butterick Publishing Company's splendid mechanical facilities. As the combination that may be printed in any advertisement (measuring one column or more) permits the use of black with nearly every other color that may be desired, the possibilities of this new departure in showing fabrics and patterns will be readily apparent to the textile trade.

RALPH TILTON, Manager of Advertising
Butterick Building, New York City

Get the October Delineator

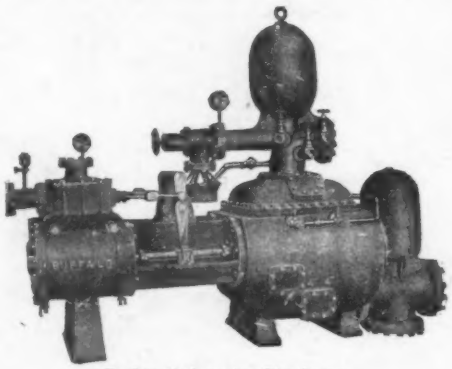
THE NEW FOSTER WINDER

OPEN WIND from start to finish of cone.
No press-offs from knots, no flattening of yarn.
The only perfect system of winding yarn.
for knitting purposes.

TUBE WINDERS, SKEIN WINDERS, DOUBLERS.

FOSTER MACHINE COMPANY,
WESTFIELD, MASS.

Fire Protection



Buffalo Underwriter Fire Pump

WHEN DANGER THREATENS AN ADDED SECURITY IS FELT BY THE MILL OR FACTORY OWNER WHOSE FIRE FIGHTING SYSTEM INCLUDES A BUFFALO UNDERWRITER PUMP

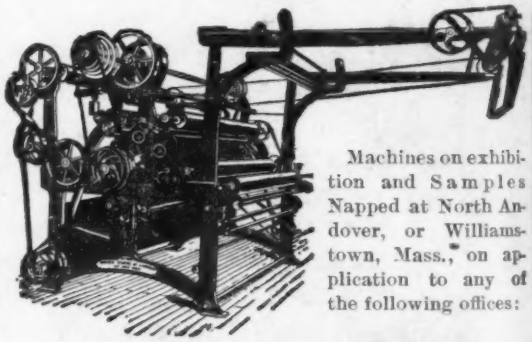
Built throughout from new patterns, in strict conformity to the 1904 specifications

Send for new Catalogue, just out

Buffalo Steam Pump Company
BUFFALO, N. Y.

THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



Machines on exhibition and Samples Napped at North Andover, or Williamstown, Mass., on application to any of the following offices:

Davis & Furber Machine Co.,
Builders and Selling Agents, ... North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston.
H. P. HEAP, Treasurer and General Manager
WILLIAMSTOWN, MASS.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges,
"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES:
132 FEDERAL STREET, BOSTON, MASS.
New York Office: Park Row Building.

LB Ja '06
JUL 13 1947